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MARCH 1979 #9



Refueling Station by Vincent DiFate (Portfolio/Interview p. 58)

Harlan Ellison Sounds Off! • Bradbury's TV Chronicles
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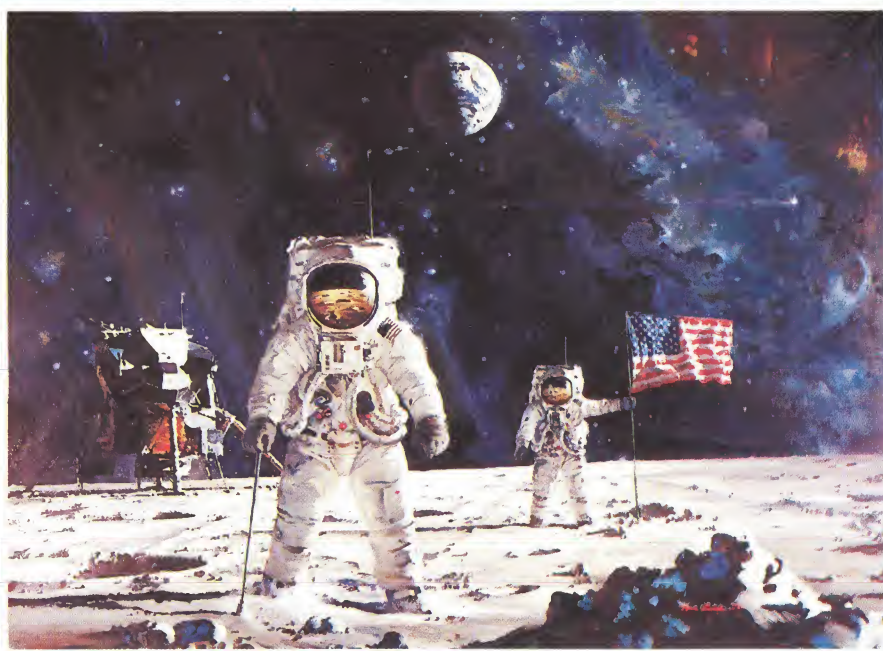
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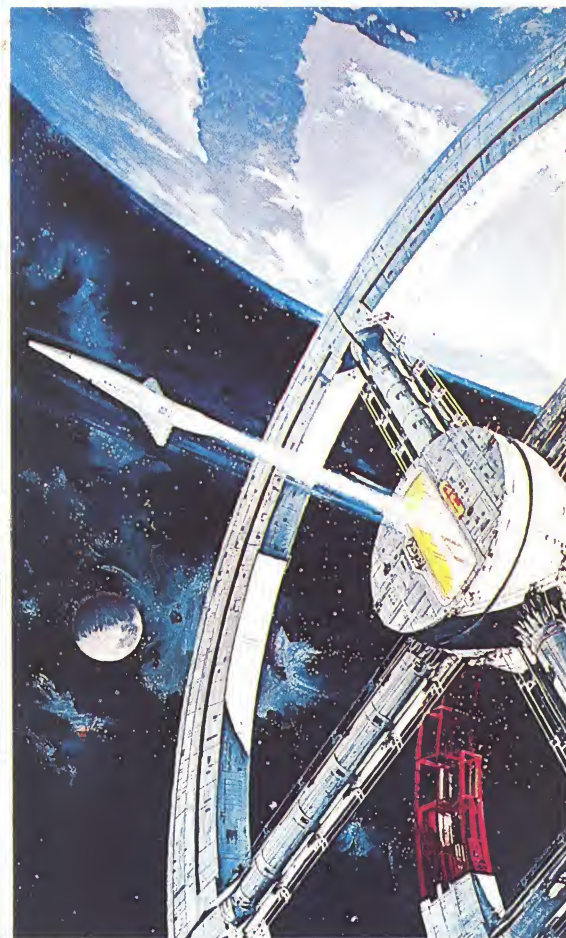
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In the future Man will use his down-to-earth technology to reach deep into the awesome infinity of outer space. Robert McCall has already been there. He has a mind that spans time and space, an eye for technical detail and the hand of a great painter. His spectacular Space Station One, created for the film "2001: A Space Odyssey," has become a collector's item and a contemporary classic.

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Apollo-Soyuz space rendezvous. McCall's work hangs in important museums, corporate offices and private collections around the world, and he has been honored in a one-man space art show at the Smithsonian Institution.

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FUTURE LIFE

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ON THE COVER: "Refueling Station" by Vincent DiFate. The red planet system looks like an alien location, but the cargo ship and space station may not be far in Earth's future. At lower right, an advanced space shuttle design. See DiFate portfolio/interview beginning on page 58.

ON THE CONTENTS PAGE: The Martian south polar cap, covered by a thin layer of water ice and frozen carbon dioxide. By Ron Miller, reprinted from *Space Art*, a STARLOG Photo Guidebook.

output

This issue marks not only the start of a new year, but also our First Anniversary. To celebrate the occasion we've done some redesigning and made some improvements in the magazine you're holding.

You probably noticed the new logo even before you opened the magazine—and the new title, FUTURE LIFE. My original suggestion for the name of our "Tomorrow" column was "Life in the Future" since that is the theme and summation of the magazine. Eventually we settled for a more succinct word, but I am happy that our new magazine title has brought that living, human element into the picture.

We've made some other editorial and design changes, along with some new staff positions, but best of all, our pages are glossy throughout—all slick, as they say. We continue to get hit with increased production costs, so it might seem curious to add this expensive beauty to our publication, but it is possible because of one impressive fact—the readership of FUTURE has increased every issue this past year.

In spite of the fact that we were forced to raise our cover price—in spite of competitive magazines that appeared on the stands—in spite of everything, the FUTURE audience almost doubled during this year!

Although our main focus is the future, and we look forward to a sensational second year as FUTURE LIFE, we are very proud of our short past. Those eight issues from the first year are destined to be collector's items.

* * *


The ability to see into the future requires a special mind. It requires a person who is a realist, a practical observer of the world as it is today—and a person who is a dreamer, an imaginative mental creator of the world as it might be (and perhaps ought to be) in the future.

These rare minds are what FUTURE LIFE presents to you. Look at the roster in this issue: Harlan Ellison—outspoken, infuriating, thought-provoking, original; Jacques Cousteau—crusading, independent, sensitive, knowledgeable; Vincent DiFate—creative, dramatic, intense, both cynical and inspiring; and other visionaries like Walt Disney, Albert Einstein and Ray Bradbury.

If you were invited to a party and heard that these people would be in attendance, you wouldn't miss it! Well, that's what we offer you every six weeks—a party, with a changing but always exciting guest list.

Like any good gathering, it's not only fun for the moment but also gives you refreshment from the ordinary routine and good positive stimulation. Hopefully it helps build your mind more and more into that special kind that also has the ability to see into the future.

Now, join the party, and circulate. . . .



Kerry O'Quinn/Publisher

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Journey Into the Future



ART: © 1977 DON DICKINSON

FUTURE LIFE

The Magazine That Looks Forward To Tomorrow



Take a trip into Tomorrow with FUTURE LIFE, the magazine of things to come. In each and every issue, explore the many worlds of 'what if,' meeting some of the top futuristic thinkers of the science and science fiction communities. Can space science save the seas? Does cryonics insure immortality? What will life on the first space colony be like? Will the new *Star Trek* movie live up to its hype? Endless questions about endless Tomorrows, answered by the experts in FUTURE LIFE.

Each issue includes:

INTERVIEWS: Exclusive talks with such imagineers as Alvin Toffler, Timothy Leary, Gerard K. O'Neill, Ray Bradbury, Arthur C. Clarke, Steven Spielberg and Gene Roddenberry.

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devoted to future trends penned by such authors as Jacques Cousteau, Isaac Asimov, Ben Bova, Fred Pohl, Roger Zelazny and Robert Anton Wilson.

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Because of the large volume of mail we receive, personal replies are impossible. Comments, questions and suggestions are appreciated, however, and those of general interest may be selected for publication in future issues. Write:

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CLARKE'S FINAL FRONTIER



... Here's the locale of my *final* novel! I've been back here a solid year, and I never want to leave again. ...

All the best,
Arthur C. Clarke
Sri Lanka

ONWARD AND UPWARD

... As usual, FUTURE grows in sophistication and value with the Feb. 1979 issue. I have watched the publication grow to become a mature, solid fact/fiction magazine that you should be proud of. It seems, though, that each time you really begin to look good, you pull a boner that critically wounds your mature image. This time, it was on page 10, in the Input column itself.

The subhead was "Astronauts Remembered," but it seems as though somebody forgot. The three Apollo 1 astronauts who died in the tragic 1967 fire were Gus Grissom, Ed White and Roger Chaffee. Referring to the latter as Chapman may have been the letter-writer's mistake, or the typesetter's, but surely should have been caught by the proofreader.

A minor error? Perhaps. But not when you consider that the audience you seem most interested in reaching—the serious futurist and the educated, aware, public—are the ones most likely to notice just such an error.

Hang in there, people. We how how hard you're trying. For the most part, you are succeeding. Keep reaching, and keep encouraging others to reach for the absolute best our collective future

can become. We can do it. We can *still* do it, despite the slimy mess the world is in. Reach! The future is there!

Guy W. McLimore, Jr.
Evansville, IN

SPACE ART PRINTS

... I was wondering if we could get reproductions of the paintings used in the Future Gallery. I think they are just great.

Peter Ellis
Bathurst M.B. Canada

One of the reasons we print each Gallery painting on the center spread of the magazine, and insert extra-quality coated paper for it, is so that readers can carefully remove the print, dry mount it and frame it. By the end of the year FUTURE LIFE readers can have a fantastic wall full of outstanding space art. Other than that, the only space art prints we know of are sold at a few planetariums and through ads in FUTURE LIFE (such as our Space Art Club prints and the Bob McCall prints).

SF BLUNDERS

... In your zeal to promote science fiction, I'm afraid you let slip a grave philosophical blunder in your publisher's note to Gerrold's "Sen. Briggs vs. SF Fandom." In it you state that science fiction deals with people and life and the ways things *ought* to be in the future. *Ought*? The word should be *could*. I would no more wish to live in some dystopias presented by SF writers than John Brunner (whom you ironically featured in the same issue) would. With so many "could be" futures, it is impossible to establish an "ought to be" for SF, a fact which is one of its assets.

Also, Gerrold's statement that we "like to pride ourselves that science-fiction people are somehow better than 'mundanes'..." smacks of bias—maybe even unrecognized bias. A certain belief or literary (or sexual) preference is no basis for categorizing people, let alone making broad generalizations. That attitude makes us near-equal to the anti-homosexual crusaders, and the term "mundane" should be stricken from our SF vocabulary. When I put that paragraph to a friend of mine moderately interested in SF, he gave me the middle-finger salute.

Dana Boden
Iowa City, IA

PRODUCERS WHO PATRONIZE

... Re: Leslie Stevens of *Buck Rogers/Galactica*: It is getting very tedious, every time you read an interview with TV or movie producers, to see how patronizing they invariably are about some mythical faction in the midwest who will not understand certain fine points of science-fiction. To rationalize their own lack of imagination, they usually explain how it was necessary to sacrifice this or that in order to appeal to their limited intellect. Really now!

Are we to believe, in this time of the global village, that anyone taking the trouble to watch SF presentations on TV or in the cinema would be

any less enlightened than the producers? In actuality, it would seem that the producers are the ones lacking enlightenment. Leslie Stevens, for instance, in *Buck Rogers*, explains how the protagonist endeavors to put a little life into a repressed society by producing disco sounds on a synthesizer. This employs two literary devices so old, they have beards!

One: the crotchety ploy from the 30s and 40s about how it is better to be plebeian than enlightened. Two: the mouldy chestnut about pop music somehow being of greater value than other forms. This is hardly an indication that the movie intellect has progressed much over the decades. Even with such lapses, however, we look forward with anticipation to the premiere of *Buck Rogers*. We hope it is as good as Mr. Stevens would have us believe. On the off-chance that this letter might persuade Mr. Stevens to reconsider certain concessions for the benefit of those mysterious midwesterners, perhaps you would forward a copy of this to him.

Gary Davis
Portland, Oregon

GALACTICA STEW

... Last November 12, I saw an episode of *Battlestar Galactica* in which their agro-ships were destroyed by the Cylons. Are their agro-ships the same ones used in the film *Silent Running*?

Marc Viens
Swarte Creek, MI

Sure looked that way. Apparently, Universal (which owns both Galactica and Silent Running) isn't above using a few feet of stock footage every so often to liven up the video action.

FUTUREPHILE

... I am a student and a regular subscriber to your magazine. In my opinion, it's the best scientific magazine I have read so far, containing many interesting articles which enhance scientific knowledge.

A few months ago, I wrote to NASA requesting them to supply me space exploration material, photographs of the Moon Mission and the exploration of Viking on Mars. So far, I have not received a reply. Can you help?

Nasser Rahman
London, England

NASA, as you probably realize, is sometimes deluged with requests for material. However, for best results, send a letter to: NASA Headquarters, attn: Public Affairs, Washington, D.C. 20546.

MINORITY QUESTION

... Regarding the comments of Joanna Russ in the Future Forum of the January 1979 #7 issue. Apparently, Ms. Russ is one of those people who believe that the only reason a minority group (whether of race, class, sex or whatever) is not represented on the staff of a particular project (such as FUTURE LIFE) is because those al-

(continued on page 8)



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For several years CINEMAGIC has been one of the most popular and most important movie fanzines published, but like all fanzines, it has been very limited in distribution. People have heard of it, but most young filmmakers have never actually seen a copy. Back issues are expensive rare collectors items now. It's almost a mythical underground legend... like the lost continent of Atlantis.

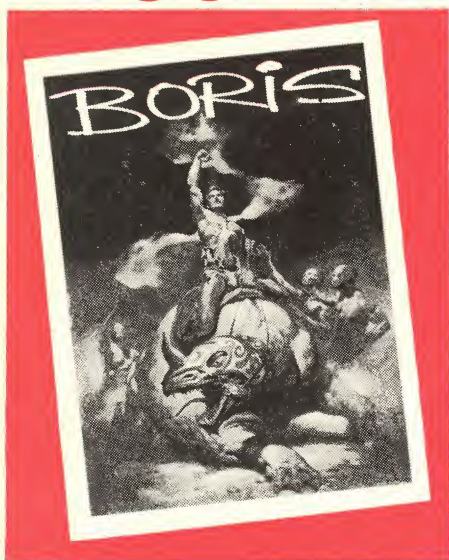
But now that will change. The publishers of STARLOG have joined forces with Don Dohler, the originator of CINEMAGIC, in order to produce a new, exciting version of the magazine that will enjoy wide distribution (only by subscription and in collector shops—no newsstands!) and will include photo articles about pros as well as amateurs.

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input

(Continued from page 6)

ready on the staff are in some way keeping them off. Such is not always the case.

While I am a staunch supporter of human and civil rights in all forms, and a foe of discrimination, I became aware, while running the news department of a college radio station in New York some six months ago, that often the reason minorities do not join a particular staff in "significant" numbers is that, for any number of reasons, not very many of them are interested in it.

Active recruitment of minorities is not necessarily the solution to the problem. While it can be of help, the directors of a news department, or a magazine, cannot stop every woman, black or whomever they see on the street and drag them back to the office.

Perhaps since Ms. Russ became a professional in the SF field, she has forgotten how few women in her generation expressed an active interest in science fiction (or science, for that matter) while in their sub-teens and teens. While that disinterest can be blamed, in part, on the pressures of society, and thus is not the fault of the women themselves, neither is it the fault of the young men who are their contemporaries, including the staff of FUTURE LIFE.

Patrick Daniel O'Neill
Brooklyn, N Y

By the by, one of FUTURE LIFE's new co-editors is a woman. . . it's up to you to guess which one. (HINT: the other one has a beard.)

AD INFINITUM

... Thank you, thank you, Robert Anton Wilson for your great and informative article "Next Step Immortality" (FUTURE #6). I really enjoyed your article and hope that you have many more. However, I would like to see future articles be longer and include such topics as aging as well as cryonics, GH⁺, placental injections, etc.

Mark Roulston
Middleburgh, FL

Robert Anton Wilson will be returning to the pages of FUTURE LIFE shortly.

DYSON DILEMMA

... Hold it! That article of Kepler's "Astral Architecture" (FUTURE #8) smacks seriously of the same brands of Urban Ghetto Renewal "What's good for General Motors is good for America" quasi-imperialistic dynastism which fostered many of your notable wars at home and abroad. Aside from that, many questions are left dangling in the article. Questions like:

1) Where are you going to get enough shielding atmosphere to put inside that Dyson Sphere to keep its x-billion population from dying of skin cancer from the ultraviolet rays of the Sun or suffering any variety of effects from cosmic rays or solar winds?

2) Once you've sliced up Jupiter what compensates for the sudden loss of this sizeable mass and its effect on the mutual gravitational balances all star and planet bodies have on each other? What happens if/when some of these orbits begin to destabilize and start wobbling or changing completely?

3) Meanwhile, what is Joe Schlep, from the an-

cient city of Irvana, Ill., going to come home to after work? What do you do with this fuzz-ball we're making payments on?

OK, let's assume he's found "perfect answers" to these three questions. Now, he's got his Dyson Sphere droozling along through the cosmos and the power starts to fade. What to do? Why, trigger a controlled supernova, of course. *Doesn't Kepler know that you don't put nitroglycerine in your own boiler?* Just who does he think he is? Does he honestly think anybody in the x-thousand high technology cultures is going to sit for this (if they sit?). After reading this article, it sounds like it's an American plan all the way: don't care who or what lives on it, just take it over, chop it up. "What's good for the Earth is good for the Galaxy" and all that.

Allen L. Parker
Brooklyn, NY
Stardate 7312.18

For the record, Mr. Kepler has never stored any nitro in his boiler, to our knowledge.

SNAFU

... You goofed. I appreciated the article on extraterrestrial employment tips in # 7 and I dropped a postcard to all the addresses you mentioned. My first reply was from the American Astronomical Society enclosing a small booklet and a nice note suggesting I write to the Dept. of Public Information, NASA Headquarters, 400 Maryland Ave. S.W., Washington, D.C. 20546 or The American Astronautical Society, 6060 Duke St., Alexandria, VA 22304. You printed the wrong address, folks.

Bob Boyle
Southington, CT

You're right, our printer's devil got Astro-nautical and Astronomical addresses confused. But, the chances of that happening again are simply astronomical. . . er, nomical in nature.

ANOTHER CLOSE ENCOUNTER



... The enclosed cartoon, being relevant to a couple of different phases of our "future," is submitted for your editorial consideration.

Richard L. Isakson
Forest Grove, OR

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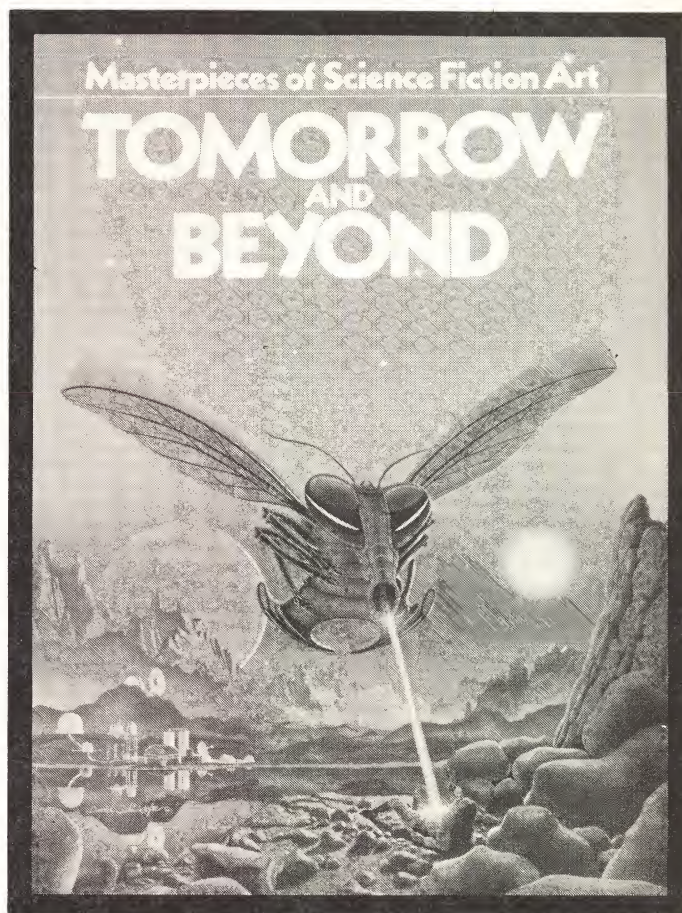
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FUTURE IN CONGRESS

ASTRONAUT/ SENATOR TOUTS AMBITIOUS SPACE PROGRAM

Schmitt in full astronaut dress prior to his voyage to the Moon on Apollo 18.



PHOTO NASA

With the space shuttle still on the launch pad, yet to spread its wings and reach for orbit, a new Senate bill is promoting the creation of a civilization in orbit as well as a manned flight to Venus and Mars! What's even more fascinating is that the bill is written by someone who has been out there and back—the last man to walk on the Moon and now Senator from New Mexico—Harrison “Jack” Schmitt.

The Schmitt bill, titled “The National Space & Aeronautics Policy Act of 1978,” details a 30-year program, almost a space-installment plan to the future. Schmitt's decade-by-decade outline begins with a first phase in operation by the year 1990. At that time, a “World Information System” will have been established, based on an elaborate satellite communication, weather and ocean forecasting network. Also included will be a global satellite system, to maximize efficient and environmentally sound uses of natural and agricultural resources on Earth.

By the year 2000, an “Orbital Civil-

ization” in near-Earth orbit will support space facilities for manufacturing, educational, health care and energy-producing services. The Senator also envisions “space recreation opportunities for as broad a spectrum of human beings as possible.”

Extending human space travel beyond Earth, Schmitt's policy blueprints, by the year 2010, a permanent Moonbase, human exploration of Mars leading up to the construction of a Martian settlement and a manned flight to the planet Venus. This phase is called the “Second Solar System Exploration Decade.”

Apparently Senator Schmitt hopes to focus attention on new goals for this nation's space program—goals that some Washington observers feel are missing from President Carter's space policies. Hearings are set to discuss the bill early this year.

At a time when the countdown clock has just about reached zero for the liftoff of the shuttle era, it's clear that the Senator intends to boldly go where no man has gone before!

—Leonard David

CHICKEN SOLUTION

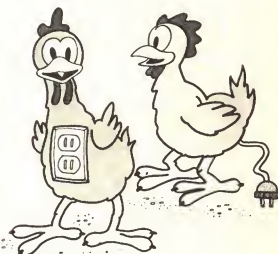
FOWL FUEL TO SOLVE ENERGY CRISIS?

You've got to hand it to those fearless scientists at Atlanta's Georgia Institute of Technology. In their ongoing search for novel energy sources, they've found that new answers to the country's fuel-and-fodder shortage may lie as close as somebody's south forty (if not in our own backyards). Performing the ultimate feat of recycling, Tech's engineers have managed to transform animal droppings into fuel, fertilizer and even food supplements.

The way Tech's research team figured it, the 900,000 tons of manure which pile up every day in the U.S. have been simply going to waste. Besides which, the Environmental Protection Agency isn't wild about the odor, pollution and health problems caused by careless disposal of the stuff. So Tech got bullish on the issue; researchers perfected a system of “anaerobic digestion” (the bacterial breakdown of organic matter in an oxygen-free atmosphere) to turn the dung into dollars. Voilà—their 10,000-gallon experimental digester, which renders once-wretched poultry refuse into a powerful combination of methane gas and solid and liquid effluents. The methane can be used as-is or upgraded to serve as a natural-gas supplement; the transmogrified solids go around again in the form of feedstock or fertilizer.

Intriguing, isn't it? Particularly when you consider the myriad com-

mercial possibilities: chickenhouses heated with “Cacadoodledo” brand “all-natural” gas. Plush fields kept fertile with rich loads of “New Generation” guano. Fat, glib fowls squawking with satisfaction over generous portions of “Pasture Pudding©” Chicken Chow. Stout swine squealing over troughs of slop beefed up with “Meadow Muffinz” brand dietary supplement. Formerly cornfed cattle noshing on “Barnyard Best” porker-poop formula feed enhancer. The whole thing fairly reeks with the smell of lucre.



ART SUSAN STEVENS

Picture it. Some day, a hard-working entrepreneur—preferably an eager sort who isn't afraid to get his hands dirty—will sit up and take note of the blossoming manure market. He'll ante up for an anaerobic digester system and join forces with a poultry farmer. He'll buy a little French restaurant—country French—where he'll install a methane-powered oven and a shifty-eyed chef. Before you know it, La Maison de Merde will be peddling \$19.95 ordures of *dung du poulet recycle Chantilly*. And we'll be gobbling it up.

Technology. Where would we be without it?

—Michelle Green

Something special is
COMING

from SF Film Productions

ENERGY FROM SPACE

SOLAR POWER SATELLITE GROUP CALLS FOR SUPPORT

The SunSat Energy Council, a national non-profit organization formed to encourage the development of solar power satellites (SPS), held its annual meeting in Washington, D.C. on October 5. The clear message emerging from the symposium: industry believes it can do the job, but government agencies want to move cautiously.

Peter Glaser of Arthur D. Little, Inc., who originated the SPS concept in 1968, is president of SunSat. He said that most of the technically competent people who have seriously studied the SPS concept have seen its merits. The public—particularly the younger generation—senses that this is an option that would help solve our future energy problems. Successful SPS development could lead to expanded peaceful uses of space.

Arthur Kantrowitz, Chairman of AVCO Everett Research Laboratory, predicted that the Solar Power Satellite will not fly in "the time of timidity." Either the time of timidity will destroy the SPS, or the SPS will destroy the time of timidity.

The project managers for the Boeing and Rockwell SPS definition studies, contracted by NASA, made similar presentations arguing that the SPS is technologically feasible, though cost estimates are subject to some uncertainty. It would take 300 to 500 people in orbit to build a solar power satellite in six months to a year.

W.E. Gordon of Rice University described the results of tests which beamed microwaves at the ionosphere; at SPS frequencies, they caused no effects which would interfere with radio transmission. However, further testing is necessary.

A.J. Dessler of the Universities Space Research Association said that six universities are now engaged in SPS graduate-level research at an estimated \$200,000 a year; projected Ph.D. thesis research would require about \$5 million a year.

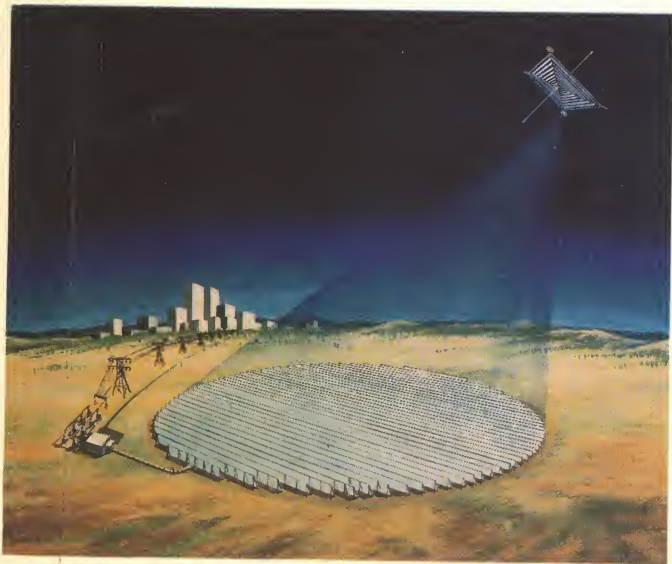
Department of Energy SPS Project Manager Fred Koumanoff made it clear that all issues concerning the SPS, such as the possible environmental effects of the microwave beam, would get a full public airing. DOE and NASA are engaged in a three-year SPS Concept Development and Evaluation Program.

Space colony proponent Gerard O'Neill addressed the meeting, describing the possible use of non-terrestrial materials to construct satellite solar power stations.

The U.S. government's attitude toward SPS was indicated by President Carter in a speech at Cape Canaveral on October 1, when he said that, "In my judgment, it is too early to commit the nation to such projects. But we will continue the evolving development of our technology, taking intermediate steps that will keep open future possibilities."

Membership in the SunSat Energy Council is open to all, at \$15.00 a year for individuals. Write to SunSat Energy Council, c/o David Keller, Suite 480, 600 New Hampshire Avenue, N.W., Washington, D.C. 20037.

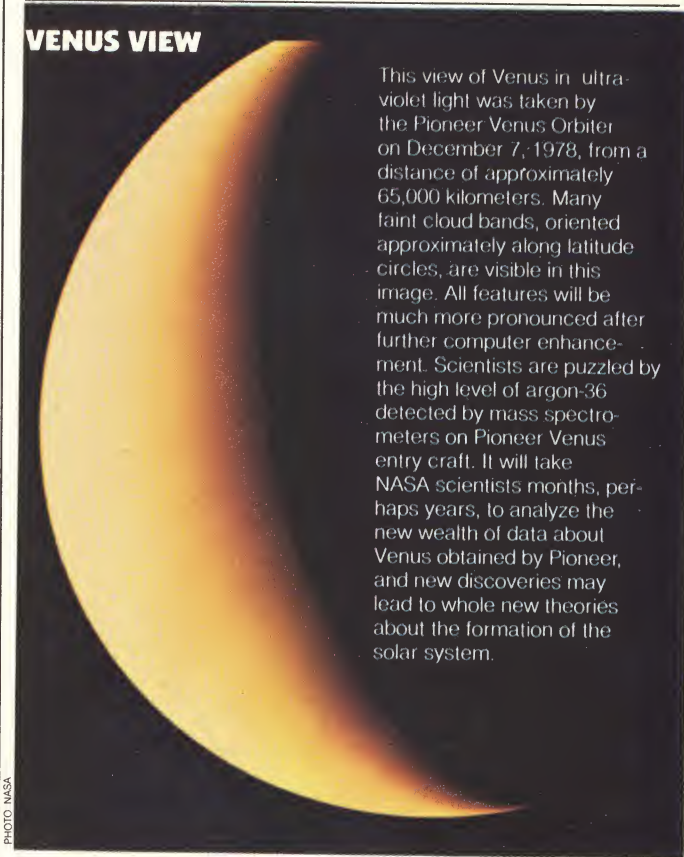
—Michael A. G. Michaud



Energy from powersats would be beamed to antenna farms.

SPACE SCIENCE

VENUS VIEW



This view of Venus in ultraviolet light was taken by the Pioneer Venus Orbiter on December 7, 1978, from a distance of approximately 65,000 kilometers. Many faint cloud bands, oriented approximately along latitude circles, are visible in this image. All features will be much more pronounced after further computer enhancement. Scientists are puzzled by the high level of argon-36 detected by mass spectrometers on Pioneer Venus entry craft. It will take NASA scientists months, perhaps years, to analyze the new wealth of data about Venus obtained by Pioneer, and new discoveries may lead to whole new theories about the formation of the solar system.

COMMUNICATIONS TECHNOLOGY

PUSH BUTTON LANGUAGE

Every summer, without fail, millions of tourists journey to exotic vacationlands, only to spend most of their time in a life and death struggle with local linguistics. One of the most pathetic sights in the history of the Earth has to be that of the American in Paris, the Briton in Spain or the Italian in America, grappling with their foreign language dictionaries while attempting to communicate such lofty ideas as "how much is that?" "where is my hotel?" and "please give me back my wallet."

Now, thanks to a Miami-based electronics firm, Lexicon Corporation, tourists may replace their dog-eared dictionaries with a sleek, handheld computer/converter which translates English phrases into French, Spanish, Italian, German and Portuguese—and vice-versa. The six-inch-long unit consists of a small view screen and a keyboard of buttons labeled with letters of the alphabet and various numbers. When the user punches out the question or

phrase he wishes to communicate, it appears on the screen first in the user's own language then in the selected foreign one. "If you cannot pronounce the foreign words," says one Lexicon executive, "you can simply show the screen to whomever and they will understand."

For each foreign language desired, there is a cartridge with a vocabulary of 1,500 words that can be plugged into the computer, converting it into a memory calculator. The only possible hitch lies in the viewing screen, which prints only 16 characters at a time. But, according to the folks at Lexicon, that's no problem if you keep your grammar simple. And, if you have trouble getting a proper translation, "simplify rephrase and enter again," they advise.

The computer, which weighs 11½ ounces with a cartridge, comes with an adaptor-charger, operating the unit on either 110 or 220 volts. The price of a unit, with one language cartridge, carrying case and adaptor-charger is \$225. Additional cartridges are \$65 each.

Alright. Fingers poised, world travelers. Quickly... "Call the police, some gypsies have stolen my lips."

—Charles Bogle



PHOTO © 1978 DC COMICS

Christopher Reeve
as the stalwart
Man of Steel.

SUPER SEQUEL

SUPERMAN II READY FOR LIFT-OFF

Believe it or not but, within a month or so, work will begin on *Superman II*, the eye-boggling sequel to last year's equally spectacular *Superman* epic. Actually, work on the visual delight began during the production of the original Man of Steel film, with the producers spending \$30 million on the first project and an additional \$10 million on footage for the sequel. By the time *Superman* was ready for its premiere last December, Warner Brothers had one and a half films in the can.

Returning for *Superman II* will be, quite naturally, Chris Reeve who won the hearts of critics and fans alike with his wonderfully schizoid portrayal of The Man of Steel/Clark Kent. Also back for an encore will be Margot Kidder, Jackie Cooper and the rest of the *Daily Planet* entourage.

According to *Superman* director Richard Donner, who will also helm the sequel, the second adventure will be "very emotional. The relationship between Lois and Clark becomes fuller. Lois even makes love to Superman. It's done with the greatest of taste, though."

According to informed sources, the millions of moviegoers who were

dazzled by the exploits of Krypton's leading citizen in the first opus will not be disappointed with his adventures in the second.

This time out, the villainy Superman is forced to fight is out of this world...literally. Once again, audiences will meet up with General Zod (Terence Stamp) and his two Kryptonian criminal cronies, exiled into the Phantom Zone by Jor-El (Marlon Brando) in *Superman*. Through various nefarious means, the three alien thugs make their way to contemporary Earth where they become super-villains. All hell breaks loose when The Man of Steel meets the equally superhuman Phantom Zone force over the skies of America. It's a super-struggle to the death.

And, if *Superman II* is as big a smash at the box office as the original film is at present, director Donner says that you can count on more. "If it's a success," he says, "then it's served its purpose. It's captured an audience. I'd be more than happy to see a *Superman 3*, 4 or 5, although I won't have anything to do with them. If Superman becomes as popular as I think he will, he should go on. But if they start to slop the sequels up, Chris won't do them. Then, there'll be 'our' Superman and 'their' Superman. But, if they maintain our integrity, I'd love to see the further adventures of Superman." —Joseph Kay

SF FRIGHT FILM

LOOK OUT FOR "THE HUMANOID"

American International Pictures will be releasing *The Humanoid* this summer, the highest-budgeted science-fiction film ever lensed in Italy. Richard Kiel, Barbara Bach (two of the stars of the James Bond epic *The Spy Who Loved Me*), Arthur Kennedy, Corinne Clery and Leonard Mann star in this SF thriller concerning the attempts of a genius from another world to take over Earth.

Five months of shooting in Africa and Israel have already been com-

pleted on the \$7 million work, with three crews working simultaneously on the principal photography, involving over 150 technicians. Five months of involved special effects work began last October. Visual-effects expert Zoltan Perisic, who worked on the design of the front-projection effects system used on *Superman—The Movie*, has expanded the use of the process for *The Humanoid*. Max Neville, another holdover from the *Superman* team, will also be handling key effects.

Directed by George B. Lewis for producer Giorgia Venturini, *The Humanoid* will be released in Dolby sound. —Charles Bogle



A pre-production sketch from *The Humanoid*, an Italian space opera about an alien takeover, starring towering Richard Kiel.

ART © 1979 AMERICAN INTERNATIONAL PICTURES

CINEMA IN SPACE

SPACE MOVIES MADE ON-LOCATION?

Lights...camera...action...Lbring in the asteroid!" This may well be the call of some future movie director, not at some Earthbound, Hollywood set, but in the vastness of space, suggest "think tank" experts at Science Applications, Incorporated (SAI).

With special effects dominating the budget of such epics as *2001*, *Star Wars*, and *Battlestar Galactica*, did you ever think it might have been cheaper to film the real thing right in space? A NASA-commissioned study by the SAI research group, which investigated the opportunities and markets for a space industrialization program, has proposed just such a possibility!

The SAI report not only detailed a wide range of future satellite services, but also outlined potential "People

and Space Activities," citing movie-making in the cosmos as promising. But before would-be film directors get ready to go into production, the study term cautions, "While it would be technologically feasible to produce at least parts of movies in space by 1985, using the shuttle, economic factors might delay entry until cost of transport is significantly reduced."

According to SAI, most films need to make two and a half times the production costs just to break even. With the cost of a single shuttle flight tagged at \$20 million, not to mention additional expenses, a film with a "made-in-space" stamp of audience approval, would have to return at least \$50 million to pay for itself. Historically, adds the report, only a few movies can claim such a large gross at the box office.

When costs come down, perhaps future film buffs will thrill to movies which give on-location credit to Earth's natural back lot—outer space. —Leonard David



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Star Trek: Rare Color Pics & Complete Episode Guide. Shatner & Nimoy Article



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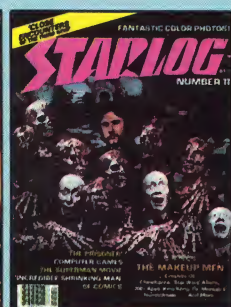
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Close Encounters feature, Star Trek II, Computer Animation, Laser Blast, Art by Bonestell, The Makeup Men, cont.



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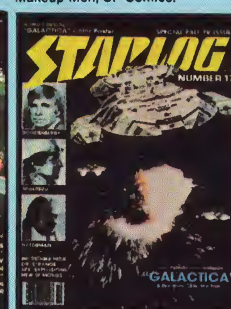
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Special Fall TV issue. Galactica: Color Poster. Interviews: Spielberg, Roddenberry. SFX: Miniature Explosions



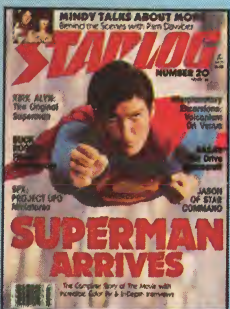
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SPACE ODDITIES

3001: INTERGALACTIC HIGH WIRE



Flash Gordon and Dale Arden in the flesh? Not quite. It's Johnny and Betty Zoppe aboard their rocketship built for two.

The lights dim for the finale. The tiny one-ring circus is enveloped in silence. Suddenly, from out of the darkness, two fire-breathing rocket ships appear, whirling and swirling above the heads of the spectators. As the crowds gasp, two Flash Gordon-esque figures emerge from the craft, climbing below the wings and, ultimately, dangling for dear life from a small trapeze.

Both the gadgetry and the gymnastics are part of Johnny and Betty Zoppe's *3001: Exploits In Space* act, the only science-fiction performance in contemporary circusdom. A variation of the classic trapeze-rigging theme, *3001* fulfills the spacey visions envisioned by inventive Johnny a few years ago. "I had started this about a year before *Star Wars*," he marvels. "Because of the science-fiction fad, the timing was perfect."

When Johnny first began designing the rockets and the rigging he ran into snags. "Most of the electronics became too sophisticated, so I enrolled in a correspondence school and learned what I had to learn. The whole act

was so mechanical that I thought for a while it would be impossible, but I felt that it was time to change the idea of the 'man on the flying trapeze.' The thing that actually propels the rigging is the tail rotor of a helicopter."

The finished act, with the rockets and rigging manipulated from below by the Zoppe's 11-year-old son, Mario, is a space opera extraordinaire, ending like the typical Flash Gordon cliffhanger of old. With fire spewing forth from the rockets, Johnny climbs back onto his ship while Betty "misses" her footing several times before finally regaining her perch. A boffo ending, right? Well, not quite.

According to Zoppe, "When we first did it, Betty's mother almost had a heart attack. Her brother was going to kill us. He jumped over the wall and over the rigging. When we told him it was the way we played it up—it was the act—he didn't think it was too funny."

Wonder how Buster Crabbe's mom felt about Emperor Ming?

—Charles Bogle

ANTI-NUKE ACTIVITIES

DISARM THE ARMS RACE

In the face of mounting national interest in both nuclear war-related civil defense activities and government-endorsed escalation of nuclear arms, a New York City church has committed itself to a program called "Reverse the Arms Race." At a recent conference held to support the religious-based effort, over 500 members of the clergy and lay population crowded into Manhattan's Riverside Church.

According to Riverside's senior minister, the Reverend William Sloane Coffin, the anti-nuke movement arose in the church as a matter of necessity. "The Pentagon has become just like the Reverend Jim Jones," he commented. "Who should refuse the civil-defense drills, who should refuse the giant vat of Pentagon poison more than the religious community?"

Echoing the Rev. Coffin's sentiments was Richard Barnett, a co-founder of the Institute for Policy Studies, who, along with Pete Seeger, Dr. Benjamin Spock and Rep.

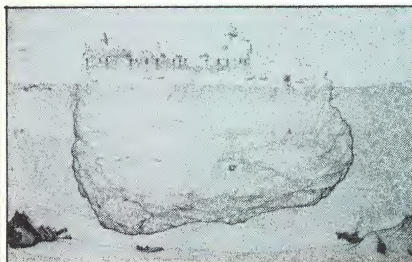
Ronald V. Dellums (D-Michigan), spoke at the gathering. In Barnett's eyes, the Earth is entering a "third stage" of the nuclear age, in which the "potential for mistakes" has escalated to a dangerous level. He pointed out to audiences that the fate of the entire world now rests with a horde of computer systems as well as the judgement of submarine commanders "who have been under the sea for months" and "Presidents making judgements on no sleep."

With its initial local seminar a success, the "Reverse the Arms Race" brigade will now take their pacifistic message to the nation at large, partially through the efforts of Riverside coordinator Cora Weiss. "Riverside Church is totally committed to this effort," said Weiss at the time of the gathering. "On the local level they are holding coffee hours on Sunday and teach-ins for people. On a national level, we are trying to bring information to people."

One of the hopes of the Riverside group is that, in the future, when and if the U.S. government reduces its spending on arms, more federal funds can be applied to such people-related areas as medicine, education and other socially relevant matters.

—Stella Morris

ART. © 1977 GEORGE PAL



Science-fiction film producer George Pal's conception of the first iceberg tow. Envisioned by Pal as a science-fiction screen epic a few years ago, berg towing is now considered a near reality.

ECOLOGICAL ALTERNATIVE

ICEBERG U-HAUL TRIES HARDER

A few years ago, Prince Mohamed al Faisal al Saud came up with a fairly bizarre solution to Saudi Arabia's water shortage problems. He proposed to tow an iceberg to his homeland on the Red Sea, where the mountain of ice would be melted for fresh-water drinking and irrigation. He has yet to realize his goal, although he hasn't given up trying.

In 1976, the Cicero Company, a Paris engineering firm hired by the Prince, promised that the first berg would be towed by the end of that year; its 85 million tons costing approximately \$90 million to move.

By 1977, it was clear that the Cicero crew's predictions were a bit off base. So the Saudi Prince began his own company, Iceberg Transport Interna-

tional, to complete the task. As of now, according to executive secretary Danial Lachat, the company is very close to taking the science-fiction-esque idea and making it a science fact. At Iceberg Transport's headquarters in Paris, towing tests are being conducted in laboratories. In addition, 125-ton wooden models of bergs are being yanked across unsuspecting lakes in Switzerland on test runs. Supplementing the experimentation, the Transport workers are actually observing the natural movements of icebergs.

"We're trying to learn the behavior of an iceberg," says Lachat. "We want to know how it behaves with wind and currents." Both the prince and Lachat believe that, in the very near future, man-moved icebergs will be commonplace. According to Lachat, the first towing is just a year or two away. "1981 would be thinkable," he concludes. —William Pratt



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ELECTRIFIED MEDIEVAL MELODY

In the 1960s, a young musician's best friend was his guitar. In the 1980s, according to 26-year-old Rupert Randall Chappelle, it will unquestionably be his synthesizer.

Chappelle, who lives in a quiet Maryland suburb of Washington, D.C., is an example of an increasingly widespread musical phenomenon: the self-taught, home-styled synthesizer musician. Dressed in a flowing tunic covered with a shirt of chain mail, Rupert does not exactly look like the prototype of a futuristic maestro. Yet, surrounded by a living room cluttered with various keyboards, black boxes, speakers and snaking electrical cables, he seems quite at home.

Chappelle firmly believes that, before the 1970s are over, a lot of living rooms will resemble his; with the synthesizer becoming as popular a fixture in the American home as teenaged Johnny's electric guitar is today. "The technology is there," he asserts, "and it's becoming as readily available as stereo equipment."

To prove his point, Rupert recently borrowed enough money to allow him to record an electronic LP of his own. Called *Ozone Music*, the LP contains more than 36 minutes of spacey synthesized sound. As impressive an accomplishment as the *Ozone* album is, Rupert tends to downplay its uniqueness, referring to it as a logical by-product of the state of the art.

"Synthesizer technology today," he explains, "is like the pocket calculator technology of six or seven years ago. It's just on the threshold of real portability and outrageously cheap prices. It's amazing what's happened in the past couple of years. We now have polyphonic synthesizers that can play as many as 16 tones at once, where only a few years ago we had to be content with one tone at a time."

"We've got digital synthesizers that create sound completely by programmable computer memories—no electronic oscillator is employed at all. We've got sequencers that can be programmed to spit out nine or ten simultaneously repeating phrases of up to 60 tones. It's incredible how fast things are progressing."

Although Chappelle is totally immersed in the current synthesized sound wave he is not, as one might suspect, an experiment-obsessed Techno-Pioneer. He is simply a modern music fan who has evolved into a natural hardware assimilator. In other words, the basement tinkers and electrical engineers come up

with the innovations and Rupert puts them to use. The result is music.

Rupert's love affair with synthesized sound began in 1973 when he bought his first model—an Arp Odyssey. Inspired by Walter Carlos' *Switched-On Bach*, he attempted to do for Medieval music what Carlos did for Bach. Much to his chagrin, he found the task impossible. His synthesizer was unable to mimic the complex voicings on the album, which were created by countless studio overdubs. Lowering his sights slightly, Rupert began listening to the single voice antics of such pop-synthesizer exponents as Emerson, Lake & Palmer, Yes, Rick Wakeman, Tangerine Dream, Kraftwerk and Klaus Schulze. The more he listened, the more ideas and techniques he assimilated.

Gradually, the amateur took on professional qualities. He added an Arp String Ensemble to his Odyssey, enabling him to give fuller depth and texture to his work, mixing linear melody lines with orchestral effects. He later added an Arp 2600 (which afforded more flexibility and tone control) and a Sequencer (built by Arthur Harrison, it allowed the programming of a variety of additional phrases) to his musical arsenal.

At last, Rupert felt he was ready to create his own long playing disc. And thus, *Ozone Music* was created. Pressing 1,000 copies of the homegrown opus, Rupert himself distributed the album to the better record stores in the Washington D.C. area. (Metallic music buffs outside that area may obtain copies by sending \$5.50 to Rupert at 4411 Hallett Street, Rockville, Maryland 20853).

An impressive debut, *Ozone Music* reflects Rupert's love for the popular side of synthesized sound, incorporating echoes of Klaus Schulze and Michael Hoenig within its ethereal melody lines. Although the sound is not as pop-oriented as Kraftwerk, it is easily accessible to those unfamiliar with electronic sound, featuring Chappelle's own, stylistic ideas.

With one long player completed and countless other homemade epics to go, Rupert sees the world of synthesized sound as just opening up. He envisions the music of the 1980s as a fusion between the current Top Forty sound and progressive electronic styling. He's probably right at that. It's usually maverick musicians such as Rupert Randall Chappelle: who, working independent of fashionable fads, create the trends of tomorrow today.

—Lou Stathis

Electronic musician Rupert Chappelle has released his homegrown synthesizer disc.



HOLOCAUST FEVER

RETURN OF THE
FALLOUT SHELTER

During the Cold War era of the 1950s, a wave of nuclear inspired paranoia swept the land and hundreds of thousands of American citizens dutifully built A-bomb proof fallout shelters to protect them from a Russian instigated holocaust. During the 60s, the fear of nuclear cataclysm lessened and, recently, the time of detente all but buried the thought of a Third World War from the public's mind.

Well, paranoia is back. A rash of recent government statements warning of the possibility of atomic disaster has plunged a number of Federal and State agencies into atomic warfare wonderment. The Carter Administration has decided to ask Congress for about \$190 million to begin full-scale development of the M-X missile, a mobile intercontinental ballistic missile that would be "safe" from a Soviet surprise attack. The funds to move the twice-delayed mobile missile project into a key developmental stage would be included in a \$2.2 billion supplemental money bill for the 1979 fiscal year.

Meanwhile, back on the homefront, the U.S. Defense Civil Preparedness Agency is advising State and local organizations on formulating plans for mass evacuation should

a nuclear war occur. In terms of priority planning, the agency is working with the most likely nuke strike targets first. One of the initial cities to benefit from the wisdom of the U.S. Defense crew is New York, a sure goner should W W III take place. In a plan under study by the U.S. agency, the state's Disaster Preparedness Office and the city's Civil Preparedness Office, if threatened by nuclear attack, the city's eight million inhabitants will be evacuated via bus, car, train, plane and boat to safer areas of New York state. According to Richard Herskowitz, director of nuclear civil protection planning and the man in charge, the plan is sound. "I'm sure it can be done," he commented.

"It's incredibly complex," he admitted. "It can't be done perfectly and it can't be done quickly. And there's no question it would be very horrendous and difficult for everyone involved. But it can be done."

The fly in the radioactive ointment? In order to successfully evacuate the Big Apple, a warning of "a week or two" would be needed. According to Herskowitz, "If an attack is expected within a day or two... forget it. Anyone in a blast area is virtually a goner."

Thus far, NYC's anti-nuke plan has cost \$500,000 and taken three years to formulate. It is not expected to be complete for another three years. Where are those fallout shelters when you really need them?

—William Pratt

MECHANICAL MAMMAL

A WHALE OF A SCARE

A Japanese attempt to placate ecology-minded citizens has resulted in an instance of *real* life imitating *reel*. Borrowing a page from the *Jaws II* book of mechanical terror, the Japanese government has constructed a \$16,000 pseudo-whale designed to frighten dolphins from Japan's shore line.

In February of last year, Japan was harshly criticized by ecologists when

native fishermen killed about 1,000 dolphins off the southern coast. The fishermen insisted that the dolphins were damaging fish breeding areas. The government's new solution, in the form of the nuts-and-bolts whale, will patrol the waters in question. As well as boasting a 13-foot-long case of uglies, the lubricated leviathan is equipped with a taped "voice" designed to scare the visiting dolphin schools out of their wits and, most importantly, out of Japan's waters.

Herman Melville probably wouldn't have approved.

—W.P.

MOVIE SOUNDTRACK RECORDS FROM STARLOG RECORDS

NEW!

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OUR LATEST
RELEASE

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BERNARD HERRMANN was one of the greatest composers ever to work in motion pictures. His scores to Hitchcock movies like "Psycho," "North By Northwest," "Vertigo," and "The Man Who Knew Too Much," were responsible for creating new heights of suspense, thrills, adventure, and terror. His music for "The Day the Earth Stood Still," "Seventh Voyage of Sinbad," "Mysterious Island," and "Journey to the Center of the Earth," helped make these films classics and endeared him forever to fantasy and science-fiction fans.

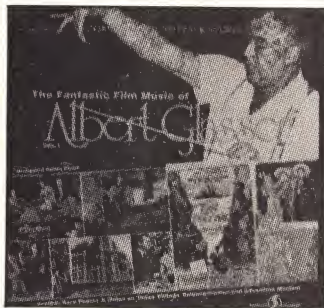
About a year before Herrmann's death, he composed and conducted a moody, mysterious score for "It's Alive," an SF-horror tale of a monster, mutant baby. The success of the film led to a sequel, and Herrmann's music was lovingly and respectfully reorchestrated and conducted by his dear friend Laurie Johnson. It's not party music; it's a score for those who want to dim the lights, get into a dark mood, and listen carefully to some wonderful musical chords and effects, including bizarre instruments such as twin synthesizers. The score to "It's Alive 2" (complete on this record) will recall the entire range of Bernard Herrmann's golden years in film music. *Can be played in STEREO or QUAD (SQMatrix)*

BIG DRAMATIC MUSIC

A full hour of exciting orchestral suites from the movies of Albert Glasser, one of the most prolific and talented composers of Hollywood's Golden Age.

Never previously released, the thundering, soaring scores include stereophonic sound, and the deluxe jacket opens up revealing rare photos, credits, and notes on the eight science-fiction and adventure shows: "The Cyclops," "Top of the World," "Beginning of the End," "Amazing Colossal Man," "Big Town" TV series, "Buckskin Lady," "The Cisco Kid," "The Boy and the Pirates."

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GROFE'S ONLY FILM ALBUM

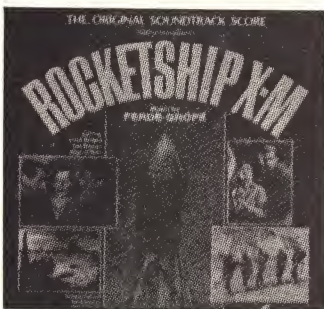
For the first time, a soundtrack record of the classic 1950 movie of Man's first step into space.

The dramatic full-orchestra score (complete on this album) is a stunning example of early Romantic film music — the type that inspired scores like "Star Wars."

Composer Ferde Grofe is best known for his "Grand Canyon Suite" and other classics. The theremin, a wailing electronic instrument used in Hitchcock's "Spellbound," is heard in the Mars sequences.

A "must" for SF fans and soundtrack collectors, the jacket includes photos and extensive background notes.

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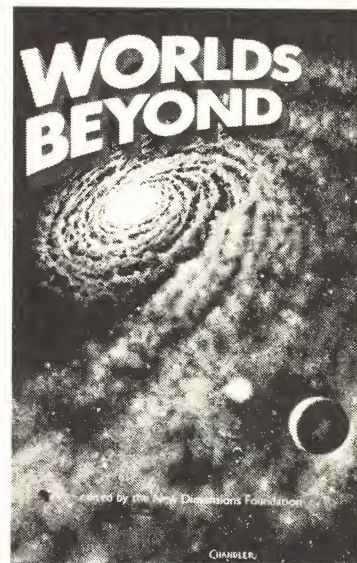
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PHOTO: MCKEE ENGINEERING

FUTURE WHEELS

RETURN OF THE ELECTRIC CAR

A time traveler who zipped back to the 1900s or forward to the year 2000 would probably run across at least one technological similarity: electric vehicles would outnumber those with internal combustion engines.

Until the early 1920s, electric vehicles (EVs) dominated the world of motor transportation. Mostly because of their limited range, however, EVs faded from the scene when self-starters replaced cranks on fuel guzzlers and cheap gas (10¢ a gallon) became easily obtainable. But today, due to the fuel crisis, environmental concerns and advanced technology, EVs are making a comeback. One government study predicts that they will once again dominate urban private transportation by the year 2000.

Congress has appropriated \$160 million over an eight-year period to fund research and development of 10,000 EVs by private industry. Some of the latest models developed under this program by Gould, Inc., and McKee Engineering Corporation (who have made more experimental EVs than any other American companies), were unveiled at EV Expo II held in Philadelphia late last year. The newest EVs are both vans: one designed as a commercial delivery service vehicle, the other for up to 12 passengers. Both are intended as short-range, urban vehicles.

Powered by an improved lead-acid

Electric van: prototype for transportation of tomorrow?

battery weighing 2,200 pounds, they have a range of 45 miles before needing recharging. At top speed of 55 mph, they can run briefly on expressways, but their average speed is 30 mph. An aerodynamically shaped nose made of lightweight fiberglass is the only appearance change in the vans. Earlier, smaller EVs developed by these companies looked sleek and futuristic.

"There's nothing basically tough about building an EV," explains Bob McKee, president of the engineering firm. "Quite simply, it is a matter of building a vehicle around a battery in a way that minimizes power drain."

Still, a practical, long-range EV capable of sustained expressway speeds is at least five to eight years in the future, company spokesmen say. Gould plans to test more powerful, high density batteries that would be the first step toward such a commuter EV next year. Meanwhile, the EVs are being used commercially on stop-and-go delivery routes. Utilities, telephone companies, and the Post Office are having success with early EVs.

Drivers like them because they give a quiet, smooth ride, but complain of difficulties in cold weather, a persistent problem with electric motors.

Government support of continuing research is based on the facts that EVs are non-polluting and could save great amounts of petroleum. If only one million of the 130 million cars and trucks in the U.S. were converted to electric, it would save approximately one billion gallons of oil a year. Converting the 26 million vehicles owned as second and third cars could save 400 million barrels of oil annually.

—Allan Maurer

TV: TO COME

ATLAS TO SHRUG ON NBC

NBC-TV, in conjunction with Henry Jaffee Enterprises, has announced plans to film an eight hour mini-series based upon Ayn Rand's futuristic classic *Atlas Shrugged*. The story, recounting the effects of a strike by the world's greatest minds, will be adapted by award-winning author Stirling Silliphant.

The NBC event marks the first time Ms. Rand has granted permission for any dramatization of *Atlas Shrugged*.

Silliphant was Rand's choice for the project, largely because of his Academy Award winning script for *In the Heat of the Night*. "It was the only good picture and the only script with a real, expert plot structure that I have seen in over ten years," she commented recently. "To paraphrase a famous statement: in regard to adapting *Atlas Shrugged* for television, the ability to understand a plot structure is not everything, it is (almost) the only thing."

Produced by Michael Jaffe, the series will be broadcast during the 1980-81 television season.

—Joseph Kay

VISIONS

AWARD-WINNING ART

Two spectacular pieces of artwork from *FUTURE* and *Space Art* have been selected by the Society of Illustrators for its 21st Annual National Exhibition. Shusei Nagaoka's city of the future (cover and fold-out poster for *FUTURE #5*) and Adolph Schaller's balloon probe descending to Jupiter (from *Space Art*, a STARLOG Photo Guidebook) will hang in the Society of Illustrators New York City gallery from February 7 until March 6. Both pieces will be printed in *Illustrators 21 Annual Book*, to be published by the Society of Illustrators in the fall.



SHUSEI NAGAOKA



ADOLPH SCHALLER

ASTRO-ADVENTURE

VISIT TO A LARGE PEANUT

Astronomers in Arizona and Hawaii have had their telescopes trained on a peculiar asteroid which they believe to be shaped like a giant peanut—about 90 by 180 miles.

The odd-shaped rock—a member of the remote Trojan family of asteroids traveling beyond the asteroid belt, in Jupiter's orbit around the Sun—may have been formed by a spectacular prehistoric collision between two coalescing asteroids, according to a recent theory put forth by William K. Hartmann of Tucson's Planetary Science Institute and Dale P. Cruik-

shank of the University of Hawaii.

Dubbed "Hektor," Asteroid 624 may be a rare example of a still-preserved, partly coalesced product of the violent collisions scientists believe took place during the formation of the solar system 4.6 billion years ago. Instead of fragmenting into lots of little asteroids or coalescing into a conventionally shaped bigger one, Hektor stuck together in its present formation. For that reason, astronomers Hartmann and Cruikshank think the peanut-shaped planetoid may hold some interesting clues about the beginnings of the solar system—and they propose that it might make an intriguing target for future space exploration. How can Jimmy Carter refuse this one? —Robin Snelson



ART: WILLIAM HARTMANN

Astronomers have discovered an odd peanut-shaped asteroid which they believe to be the result of a prehistoric collision during the formation of the solar system.

RECORDING: IT'S ALIVE

STARLOG SALUTES BERNARD HERRMANN

As a special tribute to film composer Bernard Herrmann, STARLOG Records is releasing his 50th score, *It's Alive 2*, in full 4-channel SQ Quadraphonic sound. The original 24-channel studio master tape was mixed down to a 4-channel discrete tape. The 4-channel tape was then encoded into the SQ matrix format. The SQ system is a special 4-channel system whereby the encoded information for the rear two channels is pressed into the same groove as the front two channels. It is also stereo-phonically compatible—meaning regular stereo systems will also be able to hear all the information from the front two speakers.

Bernard Herrmann wrote the original score for *It's Alive* before his death in 1975. Filmmaker Larry Cohen decided to use Herrmann's music again in his sequel to the film. Laurie Johnson was commissioned to reorchestrate and conduct the score. The result is a stunning salute to the master of fantasy film music. Among Herrmann's 50 scores were such classic science-fiction and fantasy films as *The Day the Earth Stood Still*, *Journey To the Center of the Earth* and *Mysterious Island*. He wrote highly original music on a wide-screen scale. It is therefore fitting that STARLOG Records is presenting *It's Alive 2* in Quadraphonic sound. Musically speaking, the sounds are inventive and exciting... a great tribute to one of Hollywood's most controversial and inventive composers.

REEL NEWS

AND NOW— SF FILM PRODUCTIONS

Norman Jacobs and Kerry O'Quinn have announced the formation of SF Film Productions, Inc. Growing out of their successful science-fiction publishing operation, the new company will be acquiring, developing, producing and distributing theatrical and non-theatrical movies.

Named for the field it will spotlight—science fiction—the SF logo also represents STARLOG and FUTURE LIFE magazines, currently distributed on newsstands throughout the U.S., Canada and many foreign countries.

"Through our magazines, we are closely in touch with the science-fiction audience," said co-publisher O'Quinn, "and we are confident that we can develop motion pictures that not only hit that market, but also have general mainstream appeal because of entertainment values and positive themes. We have established good relationships with the top special-effects people in the world: animators, modelmakers, matte painters—everything—but the movies we are planning will feature much more than spectacular special effects."

"As soon as commitments are firm on our first film release," added co-publisher Jacobs, "we will announce it—probably early this year. STARLOG and FUTURE LIFE readers will naturally be the first to know of definite plans."

NEWEST RELEASE



**SPACE ART CLUB Print #2, "Exploring Titan"
Painted by Ron Miller**

"Exploring Titan": Saturn's Earth-like moon is beset by a curious crew of Earthlings in this classic exploration scene. In the foreground, three astronauts make scientific measurements, while another returns to the parked Titan rover. At lower left, the Titan landing craft and another rover. The ringed planet Saturn looms in the sky, where wispy clouds are formed by Titan's methane atmosphere.

Ron Miller: In addition to serving as Space Art Advisor to STARLOG and FUTURE LIFE, Ron Miller is the author of *Space Art*, an exhaustive compendium of astronomical art published by STARLOG. Formerly an illustrator/art director for the Smithsonian Air and Space Museum, Miller's works can be seen at that institution. He was one of the artists invited by NASA to document the Apollo-Soyuz launch in 1975.

Membership in FUTURE LIFE's Space Art Club is officially closed (for this year, anyway), but space art lovers may still purchase individual prints as they are issued. A limited number of the high quality, fine art prints will be available for a short time. Cost for the 18" x 24" suitable-for-framing prints is \$10 each. Prints will be mailed in a reinforced cardboard tube. Postage and handling cost is \$2. So if this exciting scene of future exploration appeals to you—order now! When our supply of limited-edition prints is gone, money will be returned. (A very limited supply of Space Art Club Print #1, "Space Station 2000" by Bob McCall, is currently available.)

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Our art room was recently invaded by a Cylon warrior and a furry daggit—in actuality SF costume mavens Peter Mosen (in metal) and Angelique Trouvere (in fur). Humans, left to right: Phyllis Cayton, Laura O'Brien and Susan Stevens.

Imagineering the Future

A sneak preview tour of Walt Disney's Top Secret
"Community of Tomorrow"

By ROBIN SNELSON

EPCOT: Experimental Prototype Community of Tomorrow. It has been called Walt Disney's greatest dream. In the ranks of futurists, EPCOT has taken on an almost mysterious quality. Long-anticipated and much talked

"Walt Disney dreamed of a showplace for the concepts of tomorrow that would never be completed," says Card Walker, President of Walt Disney Productions. EPCOT, in Disney's vision, would be "always introducing, testing and demonstrating new ideas, new materials, new systems . . . a center for the communication of new con-



Highlight of EPCOT's pavilion of The Seas: a transparent underwater restaurant where you'll be able to feast on the harvest of the oceans surrounded by live marine life.

about, Disney's nebulously defined future city has been under a cloak of secrecy since its inception.

Just when some were beginning to wonder if EPCOT would ever become reality, Disney executives have announced its opening date: October 1, 1982.

Walt Disney had many dreams. It was his habit to classify them by numbered "master plans." Master Plan 67 became Disneyland. Master Plan 17 is Walt Disney World. EPCOT is Walt Disney's Master Plan 5.

Now EPCOT is officially underway, with at least four major corporations and 10 foreign governments committed to co-developing the expensive and ambitious project, along with Walt Disney Productions.

But according to Master Plan 5, EPCOT will never be finished.

cepts that would always be in a state of becoming."

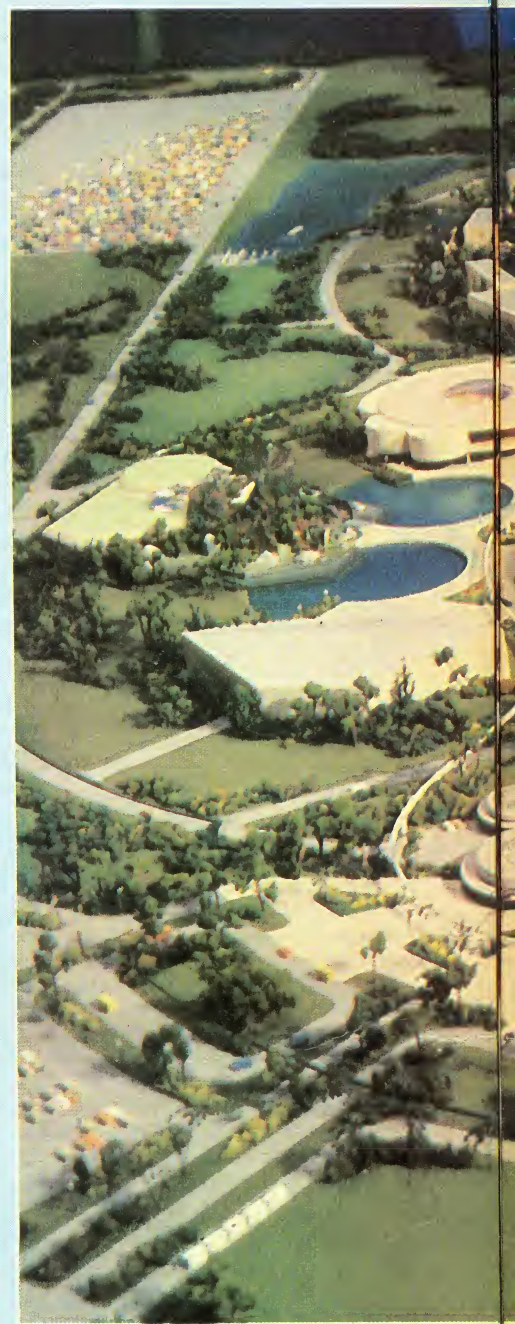
Another of EPCOT's purposes, according to Walker, is to "give voice to an optimistic future and confidence in the ingenuity of free, enterprising men and women."

Already, Walt Disney World—opened in 1971 and since visited by more than 90 million people—has become a showplace for new technologies. The patented WED-way PeopleMover and 60 mph vacuum trash system amaze Disney World visitors, while behind the scenes, new energy systems, advanced central computer systems, innovative water control and electronic telephone systems are being tested on a daily-use basis.

EPCOT's 200-acre spread, located just a

swift monorail ride away from Disney World in central Florida, will be the largest project ever undertaken by the Disney people. And according to Card Walker, EPCOT visitors will "experience a whole new generation of Disney entertainment—larger in scope and more sophisticated than anything in the history of Disney 'imagineering.'"

Construction will not begin until late 1979, but Disney's Imagineers are hard at work refining concepts and working out thousands of intricate details. Plans have been laid, models constructed, and prototypes are no doubt being built within the



ART: WALT DISNEY PRODUCTIONS



hush-hush confines of WED Enterprises' West Coast laboratories.

Needless to say, all the designs will evolve and change over the next few years, so this sneak preview may well be out of date by the time EPCOT opens its doors. But here's an advance look at current concepts and models for Walt Disney's Experimental Prototype Community of Tomorrow.

A massive golden geodesic dome dominates the entrance to EPCOT, where you buy one "admission media" good for every pavilion and adventure inside.

EPCOT is made up of two parts: Future

World—a showcase for technologies and systems of tomorrow; and World Showcase—an experiment in international co-operation and co-existence, with pavilions representing and run by many countries of the world. The two are connected by The American Adventure.

Spaceship Earth

First stop is inside the giant geodesic dome, which pays homage in both its name and structure to futuristic genius Buckminster Fuller. Inside, there's a theatrical time-machine trip to the past, where you see the first humans who recorded knowledge. Surging forward in time, the volume of

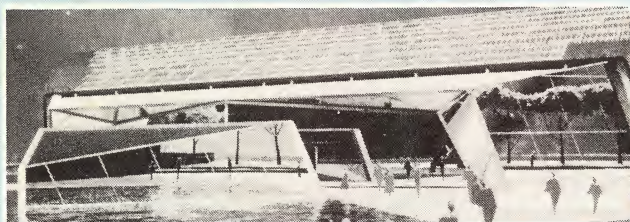
Walt Elias Disney (WED) Enterprises' working model of EPCOT. Spaceship Earth is in the foreground; in the distance World Showcase surrounds the lagoon.

human knowledge explodes . . . until you arrive in the present to see how today's communications technologies are used to process more and more information.

Communicore

The central plaza/marketplace of Future World, Communicore is a futuristic country fair of new ideas. Here you get to experiment with a video bookstore (coming soon to your living room), the Travel Port (dial in

Right: inside the giant starship of the Space pavilion as visitors travel through interstellar space. Below: starship from the outside. Exhibits trace the history of spaceflight before you take your own ride to the cosmos.



Exterior of the Energy pavilion: photovoltaic solar cells on the building collect all the energy needed to power the pavilion.

your vacation requirements and sit back to enjoy a tailored travelogue), Future Plan (computer access to immediate information on careers) and Informat Arcade (a flashy penny arcade of the past—updated for the age of information, with computer games that teach while they entertain).

Space

Highlight of the Space pavilion is the 768-passenger starship, designed by Disney Imagineers with help from Ray Bradbury. Ride a 12-story-high gantry to board the interstellar craft. Blasting off, you look out the expansive windows to see EPCOT recede in the distance below. After a quick zoom around Earth, you're off for the reaches of deep space—complete with the simulated sensation of zero-gravity.

The Seas

Take an underwater journey with Poseidon, Lord of the Sea, through the oceans of the world—from the Continental Shelf to the Great Coral Reef. At Sea Base

Alpha, see live marine animals and plants in giant aquariums and have a bite to eat in the futuristic underwater restaurant.

Life and Health

A *Fantastic Voyage*-like trip through the complex inner workings of the human body, *The Incredible Journey Within*, is the main attraction here. Also, don't miss the *You Bet Your Life* Midway—a casino setup that imparts valuable information about your health along with the gaming.

Energy

By means of sophisticated solar collectors and photovoltaic solar electric cells designed into its structure, the Energy pavilion produces at least as much energy as it uses. A trip through a primeval forest (where you witness the formation of fossil fuel) is climaxed by a violent energy storm of wind, lightning, rain, fires and volcanic eruptions—all to demonstrate the endless potential of raw energy on Earth. Solar

power satellites, ocean thermal energy conversion and other vast new sources for future power are explored in a fascinating visual presentation.

Transportation

Experimental transportation systems and prototype vehicles of tomorrow are showcased here. Highlight: a series of simulated trips—many at dizzying high speed—onboard present-day modes of transportation.

The Land

Techniques for farming desert, tropics and marshlands are illustrated in a boat cruise which takes you through climate-controlled "biomes." Another biome focuses on the farm of today—and tomorrow. Top the Land pavilion excursion off with a joyous, lifelike celebration (using three-dimensional film and other theatrical effects) of the world's great harvest festivals.

The American Adventure

At the crossroads of EPCOT, gateway between Future World and World Showcase, this giant pavilion traces the history of America from Plymouth Rock to the first step on the Moon. Benjamin Franklin, Mark Twain and Will Rogers lead a cast of American greats as your guides—via Disney's Audio-Animatronics 3-D magic.

World Showcase


A startling variety of architecture surrounds a broad man-made lagoon in the center of World Showcase. Each pavilion represents some nation of the world—and each is staffed by a rotating corps of top young people from that particular nation. Each pavilion features exhibits, adventures, entertainments, merchandise, culture and cuisine of its nation.

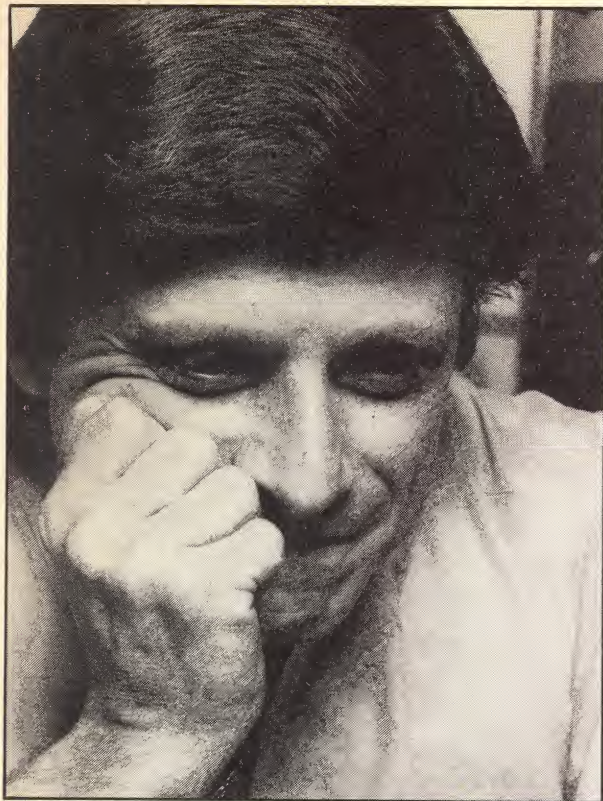
And so ends the first brief look at "Disney's greatest dream."

Already committed to participating in World Showcase are Mexico, Canada, Japan, West Germany, United Kingdom, France, United Arab Emirates, Italy, Israel and Morocco. WED Imagineers are now working with representatives from each country on preliminary design concepts for their pavilions. (For instance, part of the United Arab Emirates pavilion envisions a magic carpet ride with a holographic genie that will take you through a starlit night—and show you early Arabic contributions in the fields of astronomy, navigation and mathematics.)

Exxon, Kraft, General Motors and AT&T are the major corporations enlisted so far to co-develop Future World, and others are expected soon.

You can't buy a ticket until 1982, but EPCOT is on its way. And it promises to be as different from Disneyland and Disney World as those two landmark works of Walt's genius are from the original concept of an amusement park.

If all goes according to Master Plan 5, EPCOT will be an ever-changing showplace for prototype concepts and new ideas. It will be, as Disney envisioned, an ongoing forum of the future. 



INTERVIEW

Science fiction's last angry man reflects on his controversial celebrity status.

Harlan Ellison

By JEFFREY ELLIOT

Author Harlan Ellison first attained national prominence during SF's New Wave period of two decades ago. Touted as one of the genre's "angry young men," he introduced the world to relevant science fiction via his award-winning anthologies *Dangerous Visions* and *Again Dangerous Visions*. The author of such Hugo and Nebula Award-winning stories as "The Deathbird," "The Beast that Shouted Love at the Heart of the World," "I Have No Mouth, and I Must Scream," "Repent, Harlequin! Said the Ticktockman," "A Boy and His Dog" and "Jeffty Is Five," Ellison has become well-known as the outspoken champion of a myriad of controversial causes. As a result, he is one of science-fiction's last angry men.

FUTURE: You've been the subject of a great many stories. Why do you think so many legends have grown up around you?

ELLISON: There are any number of reasons. Not all of them are noble. I'm almost constantly angry. Because of my background, because of the youth that was mine, I'm not a wishy-washy person. I take stands on things. Whether I'm right or wrong, I do the research, I form an opinion and I'm willing to go to the grave for it. Anybody who takes a stand is automatically controversial, because most people aren't. Most people are cowards. Most people are programmed to back off, to not get involved, to not lay themselves on the line, either financially, or emotionally, or physically, or intellectually. Whether it's out of

some perverse death wish or an inability to back off, I've never been able to do that. So I'm constantly in the midst of controversy. A good example is the pro-ERA thing. It was a very tough decision for me to make. I knew it wouldn't be a popular position to take. But I had to take it. It was an ethical statement for me. Now, I'm getting an enormous amount of crap dumped on my head. It's probably going to get a lot worse because of *Iguanodon*. I have no doubt that somebody's eventually going to come up to me, say something asinine, and we're going to wind up in a fist fight. That's okay with me, because I'm always in fist fights, but stories will grow up about it.

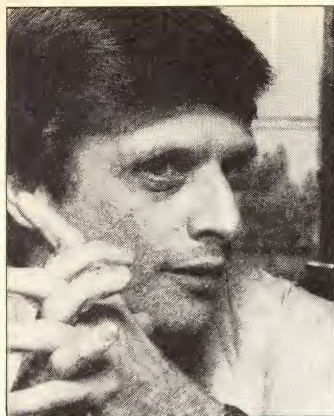
The other day I was in Seattle doing an autograph party at Tower Books. A woman came to me, whom I never saw before, and said, "Tell me about the time you dropped a chandelier on the convention audience." I said, "What are you talking about?" "Well, the time," she said, "you dropped the chandelier." I looked at her and said, "Lady, you don't look to me like a brain-damage case, but you clearly must be. Look, if somebody drops a goddamn chandelier on people, people get killed, people get hurt. The idiot who drops the chandelier gets thrown in jail. I've never been in jail for dropping a chandelier, turkey!" In her mind, she firmly believed that I dropped a chandelier on some people at a convention somewhere. God only knows where the stories come from. I've ceased denying them anymore. Now, I simply say, "That's right, I did it. Whatever you say, I did it!"

FUTURE: Have these stories had a pronounced impact upon your career?

ELLISON: The only area where this kind of thing has had any impact is at the television networks and movie studios. I'm considered a troublesome person. That's fine! I take that as a high accolade. I'm a troublemaker, a shit-kicker! I'm not co-opted. You can't buy me. You can rent me periodically, but you can't buy me. When I go to work for a studio, they know up front that I feel a primary interest in my work. I'm not a hired hand. You don't hire me, pay me for the work and then send me away. I'm going to be there all the way through. And if you screw it up, I'm going to be on your back. As a consequence, I don't work as much as I could. That's fine with me! I made \$130,000 last year. That's a lot of bread. If I wanted to push a little, I could double that figure without any sweat. But I don't write for television anymore. And I won't write for it ever again. I've given it up. It's a filthy habit! I despise television. I think it's bad for people. So I just kicked it.

FUTURE: Has your style, your bravado, your color, contributed, in a way, to your popularity as a writer?

ELLISON: I suppose that's true in some small way. I can't lie to myself about the condition of the reading public in America. Statistics recently came out which show that only 8 percent of the American public buy books. And of the 8 percent, 98 percent only buy one book a year. So they're not going to buy my work, they're not going to buy *Remembrance of Things Past*, they're not going to buy *Moby Dick*. They're going to buy *Love's Tender Fury*, or *Jaws*, or the last Harold Robbins awfulness. That means that something like 2



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percent of the American public are buying books. Unfortunately, many people fasten on my personal reputation, which is quite apart from me as a writer. However, I doubt it leads that kind of person, who would be fascinated by the cheap shitty *People* magazine kind of gossip, to read me. After all, I’m not that easy to read. My work is accessible, yes, but you’ve got to think, you really do.

And my stuff’s depressing, it’s angry, and that’s not the mode which is most successful today. The people who would be affected by my image are most likely to be people who wouldn’t pick up a book in any case. But it’s nice, I suppose, because it gets my name known. It sort of floats in the air. You’re only going to get known, and paid, for that matter, if your name free floats. I’m not really convinced, anyway, that the people who follow up on my reputation will go out and buy my books, any more than I believe that the people who watch *Star Trek* move on to reading good science fiction. Clearly that isn’t so. The amount of drek being published today in science fiction is staggering. There’s an incredible amount of crappy stuff! It’s slanted toward the kinds of people who like *Star Trek*, *Close Encounters* and *Star Wars*.

FUTURE: What explains the tremendous interest in, and curiosity about, the personal side of Harlan Ellison? Why has this “cult” following emerged?

ELLISON: The whole subject is genuinely embarrassing to me. I have very dichotomous feelings about the entire matter. I really do. On the one hand, it’s fun. It’s really fun in a kind of strange berserk way. There’s no way you can’t get off on that. On the other hand, I resent the invasion of my privacy, which is a constant thing. I resent the fact that my time is imposed upon, which happens all the time. After all, all a writer really has are talent and time. And the time that’s spent away from the typewriter is time that can never be regained. It’s a story that will never get written. I’m going to croak some day, and all the time wasted is time I could have spent writing. So I get crazed about it.

I love the benefits that come to me because of it; I go everywhere, I do everything, I know everyone. I lead the best of all

possible lives. I’m exactly what I want to be. I’m very satisfied with me. I’m very pleased with me. I do okay. I’m a good person. I’m an honest person. I care about a lot of stuff. I do good works. And I also screw up. But that goes with the program. However, I don’t quite know how to handle this “cult” thing. My readership is extremely diverse. It’s great to be able to rub elbows with famous people. It’s an incredible experience! After all, I’m just a poor Jew from Ohio. I have no training. I have no wealthy parents. I have no background. Everything I have came out of the fingers. It’s what I’ve been able to put on paper. And that’s amazing to me! I know I’m a real person. So it’s tough to understand why people are interested in me. But you’re right, people are interested, for whatever reasons.

FUTURE: Isn’t it true, though, that when you aspire to be famous, as you do, that you let yourself open for that?

ELLISON: I suppose that’s true. I try, however, to establish a kind of middle ground between the fame, which is useful, and the privacy, which is important. If you play it right, fame can give you more freedom. You can be your own person. That’s one reason why I’m as cranky as I am. People don’t mess with me! I’m constantly getting calls from people who want things; for me to speak, to get laid, to live in my house, to teach them to write, to sell their movie, etc., etc., etc. You can’t possibly imagine, in the course of a day, how much bullshit I get. People figure that if you’re in the public eye, then you’re their property. They can do anything. They can impose upon you, and it doesn’t matter. After all, you belong to them. It doesn’t matter what they ask or how they ask it. You’re supposed to take it. Well, hell, I won’t take it!

FUTURE: Have you found that your status, your fame, your recognition, have had a significant impact on your personal relationships?

ELLISON: Yes, very much so. Most of my close friends, or women with whom I get involved, are people who don’t know anything about me. That’s almost a prerequisite for me getting involved with a woman. I don’t want her to be awed, or snowed, or preoccupied with my image. Hell, I haven’t

dated a woman who’s a science-fiction fan in at least 15 years. That would drive me out of my mind! My closest friends go way back. The woman I’m going with now is a student at Tulane University. I met her when I was asked to lecture there. She knew who I was, but she wasn’t knocked out by my reputation. I certainly wasn’t one of her idols! We just met each other and happened to click. Now, she’s the delight of my life.

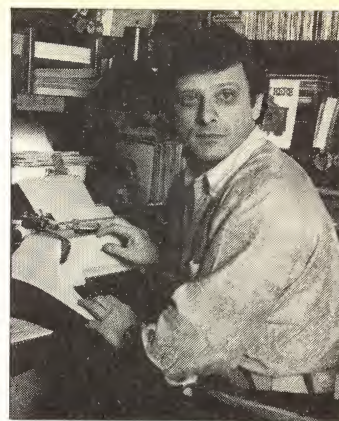
Actually, most writers live pretty dull lives. They’re not especially interesting. I’ve had a very risky life. My background is kind of turbulent. I’ve been on the road since I was 13. I seem to get in a lot of shit. Because I’ve been involved in lots of social movements, I’ve had my fair share of trouble. I would venture to bet that Frank Herbert, or Poul Anderson, or Isaac Asimov have never been in jail. They’ve never been hit in the head by a cop for protesting against something. That’s fine! They’re nice people. But readers don’t have that desire to probe their background or discover their secret lives. My fear, though, is that the flamboyant reality of my life will overshadow the seriousness of my work.

To be a big mouth, a braggart, or a clown, is one thing, but to be a serious writer, that’s quite another. If I couldn’t back up what I say with the quality of my writing, then I wouldn’t be any better than Zsa Zsa Gabor, or Charo, or Jim Nabors, or any of those people. I keep trying, though, to get people to differentiate between the two. I try to remind them of what Toulouse-Lautrec said: “One should never meet an artist whose work one admires, because the artist is always so much less than the work.” When I write, I’m solid, Jack. I’m right there. The work is good. I put a lot into it. I really get it on. When I live my life, however, I kind of bungle around like every other turkey in the world. I fall down, I stub my toes, I make mistakes.

FUTURE: Has your star status resulted in greater artistic freedom?

ELLISON: Absolutely. Nobody tells me what to write. It’s almost slopped over into movies and television. I can almost get away with doing exactly what I want. In films, it’s art by committee. It’s run by businessmen. They want to have their say. They don’t really trust the writer. In books and maga-

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zines, though, I get a guarantee. Nobody touches anything I write. I've always demanded control over my work. Sometimes I got it, other times I didn't. But mostly I did. Many people who write sell out before they have to. They compromise before they need to. They don't demand enough. As a consequence, publishers treat writers in a very cavalier fashion. They assign them stories, don't pay them, mess up their work, etc. Most writers could get many more things than they get now. All they have to do is insist. After all, they have a corner on the market. Nobody else can write what they wrote.

If a magazine wants something to be published, then they've got to give the writer what he asks for. It's as simple as that. My own success lies in the fact that, on the one hand, I'm a strong enough talent that I can demand it and, on the other, that I ask. I also have a reputation. If someone messes with me, I'll get them. If it takes me 400 years, I'll get them.

We just filed a \$2 million lawsuit against Paramount and ABC for ripping off my story, "Brillo," which I did with Ben Bova. They did it as *Super Cop*. I've got the biggest show-business attorney in the country. They're suing the asses off Paramount and ABC. With magazines and books, this sort of thing rarely happens. But in television and movies, it's constant. These people have no ideas of their own. So they figure they can take any idea they want, change it around a little and make a bundle of money. Well, this time they're going to get it. This time we're going to nail their asses to the barn door. It's going to be a great triumph, not so much for me, but for every writer who's ever gotten screwed. It will be a demonstration that you *can* fight, you *can* win. Don't take it! You don't have to!

FUTURE: Much of what you've written represents a condemnation of humanity and society. And yet, a writer's success, at least in terms of dollars, is dependent upon his ability to reach a mass audience. Do you think you've reached the average reader? Do you write with a particular audience in mind?

ELLISON: The other night I was talking to a friend of mine. He said, "It must be dif-

ficult for you to always be angry." I said, "You're right, it is." It's aggravating to constantly have your gut in turmoil. I would much rather be a "nice" guy. I don't like to get up in front of 300 people and say, "You morons, you fools, how could you spend \$12 to come to a stupid *Star Trek* convention? What possesses you?" I don't like to do that. Then someone will say, "Well, why do *you* do it?" And I'll say, "I do it, turkey, because they pay me, for crissake." When I do conventions, though, I never talk about *Star Trek*. I never lie. I never sell out. I don't do cheap entertainments. I do whatever my rap is. And then I read my stories. That's what it's all about.

But the point is, they pay me. And by paying me, I don't have to do television. That means I have the time free to do my books. And that's first. I'd kill for the work! There's nothing that gets between me and the work. Whatever it is, I'm driven to write. I'm driven to reviling what I see as the debasement of the human spirit. Really, I love the human race. It's individuals, I think, that stink! For crissake, any species that can paint the Sistine Chapel ceiling, that can send a human being to the Moon, that can develop concern for the whales, my god, that is a species that is godlike, that is noble, that is capable of anything. And yet, they're willing to settle for crap! How can I not get infuriated when I see people, who could be sitting and reading Shakespeare, or Shelley, or Keats, reading goddamn gothic novels or cheap science-fiction crap, or sitting and watching television, or going to a third-rate movie. How can I not get enraged?

That's what forms my anger. I expect so much of people. I think they're capable of so much. In their finest moments, when they're really holy, they can do anything. And yet, they permit themselves to be such dregs, to be cowed by their bosses, to be lied to by the politicians, to be blown away by big business at their fiat. That makes me nuts in the head. So I think that anybody who reads me, and who enjoys me, has to be an extraordinary person. I really believe that. There are so many easier things to read than what I write. Anybody who gets off on what I write, I think, has got to want to think deeper thoughts.

FUTURE: Is the desire to write, to express yourself, a fundamental part of your being or is it simply a way of making a living and getting by?

ELLISON: I love to write. I could no more not write than I could stop breathing. Everything I do is in some way involved with the writing. From the moment I get up in the morning, to the moment I go to bed at night, I live, eat and breathe writing. In fact, almost everything I do either develops from the writing, or forms the writing, or is a result of the writing. I am what I write.

FUTURE: What about writing strikes such a strong chord in you? After all, very few writers enjoy the isolation, the loneliness, the daily challenge which makes up the life of a writer?

ELLISON: I enjoy the whole process. I get a rush from creating. I don't use dope. I don't drink. I'm not into religion. I'm not interested in est. I'm a very pragmatic dude. For me, the act of creating, the act of building a dream, is the most exciting thing I could possibly do. Writing for me is a holy chore. That I do it well is a great achievement for me. As I get older, I want to do it better. I'm just coming into my prime, for crissake. This last quarter-century of writing—900 stories and 32 books—that's preamble, baby! I'm going to be so dynamite by the time I'm 75, you ain't gonna believe it!

This doesn't mean that writing comes easily. It doesn't. It's hard work. There're times when my arms ache in the sockets, when my back hurts so much it's hard to stand up, when my body is numb with pain. Sometimes I'll get up from the typewriter and say, "Hell, there must be an easier way to make a living." But it's said in a rueful way, the way you say, if you're involved with someone, "God, are you a pain in the ass!" But it's said with love. I love the writing. I wouldn't do anything else. If I were on a desert island and I weren't being paid a dime, I would write. I would put the stories in bottles and float them out to sea. I would do it anyway. I'm a writer.

FUTURE: How important is audience impact on your motivation?

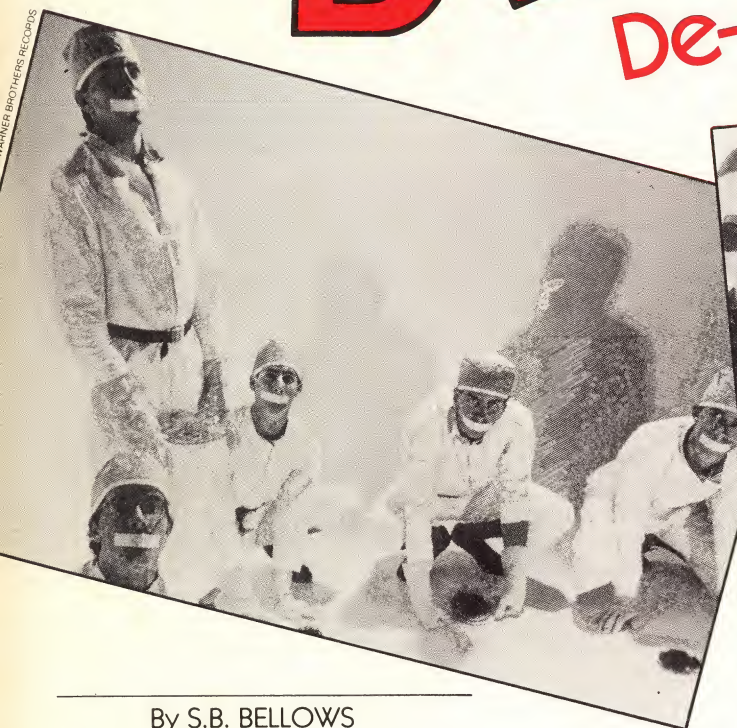
ELLISON: That ties in with my answer

(continued on page 56)

"The sound of things falling apart."

DEVO

De-evolution Music



By S.B. BELLOWS

The small club is filled with the self-professed hipsters of the music industry, fashionably chic lounge lizards who regard life in general with eyes flown at half-mast. Tonight, however, change is in the air. Industrialized banality is about to enter their lives.

The houselights dim. The footlights glow. Clad in bright yellow rubber suits and sporting reptilian goggles, five strange figures lumber onto the stage. Assuming robotic positions, instruments in hand, they stiff-arm their first power chord, weaving machine-like through their anthem, "Jocko Homo."

*They tell us that
We lost our tails
Evolving up
From little snails.
I say it's all
Just wind in sails.
Are we not men?
We are Devo!*

The band is called Devo, a progressive-regressive electric rock troupe hailing from Akron, Ohio, and brandishing a futuristic philosophy that is as facetiously fractured as it is frightening. According to Devo-ites Jerry Casale, Mark Mothersbaugh, Alan Myers and Bob I and Bob II, the shape of things to come is nothing to write home to mother about—unless she is desperately hard up for mail. This ambivalent world around us, it seems, is a symptom of a universal disease. Humankind, in the eyes of

Devo, is in the process of de-evolution (hence their Devo moniker).

De-evolution is a theory concocted by the band that states, simply, that modern humanity evolved from a horde of cannibalistic apes. Today, surrounded by technology that is rapidly becoming the new Master Race, humankind is regressing. And that, says Devo, is what the future holds for spaceship Earth. Mundanity. Sloth. Decay. But heck, since de-evolution is inevitable, why not just sit back and enjoy it?

Glibly describing the somewhat ominous Devo process, various members of the group link it directly to current backsliding trends that most people pass off as normalcy. According to Casale, de-evolution is "like when your dad gets big around the middle and the muscle tissue from the upper rib cage settles somewhere around the belt. That's pretty much the essence of it all.

"It's a fat Iowa housewife in an aqua doubleknit pantsuit going to a shopping center in a Mustang II."

"It's like when technology gets so big it's hazardous to go out and breathe the air," adds Bob I, taking a puff of a cigarette for emphasis.

"De-evolution is an end to Western Civilization as an end of progress," continues Casale cryptically, stressing that there is no real "end" to the degenerative process. Bob

I, however, would eventually like to see "recombinant DNA laboratories in people's garages."

The whimsically grotesque concept of de-evolution music was nurtured on the campus of Ohio's Kent State University where Casale was a student a few years back. There he witnessed several students killed by panicky National Guard troops during the Viet Nam protest era. "It was below tragedy—more absurd and ugly," he recalls. "It showed human beings at their worst. It was real devo."

Surrounded by a fast-fading spirit of idealism and a national move toward skepticism, Casale joined forces with several local musicians/maniacs and formed Devo, offering such memorable tunes as "Uncontrollable Urge," "Mongoloid" and "Space Junk," boasting the epic refrain, "It smashed my baby's head/and now my Sally's dead."

Offering admittedly strange sounds ("Today's noise is tomorrow's hootenanny."), the fivesome went on to search for equally outlandish garb, eventually coming up with rubber suits and goggles. "We used to wear firemen's coats," says Mothersbaugh. "It was part of our sensitivity to living in an industrial area and making use of the functional, hideous stuff around us. When the firemen's coats got too beat up, we stumbled upon protective rubber work-suits that are worn by people in factories who spray dangerous chemicals. Musically,



At left and above: at work and at play, Devo believes that "today's noise is tomorrow's hootenanny."

that is what we were about to do."

Devo, now equipped both musically and visually to bring forth their demented doctrine of futurism to a stunned public, added extra clout to their unholy crusade via a series of films designed to explain the bizarre beliefs of Devo. In *The Truth about Devolution*, mythological General Boy, head of the Devolution Army, espouses the credo of Devo, a philistine philosophy which includes such pearls of wisdom as, "The fittest shall survive—yet the unfit may live," "Be like your ancestors—or be different," "Wear gaudy colors—or avoid display . . . it's all the same" and "We must repeat."

The band finally unleashed a frontal assault on the frontal lobes of the American public with the release of their debut LP on the Warner label, *Are We Not Men?/We Are Devo*. Comments Bob I on their initial musical endeavor, "It was the sound of things falling apart."

And, appropriately enough, their de-evolution philosophy caught on in a strange sort of apathetic way with rock-and-roll fans. Accustomed to instant hype and day-glow glitter heroes, music mavens were captivated by Devo's sociological stupor. In an inspired publicity gimmick entitled "Devo Meets the Press," the fivesome shot down the traditional idea of rock-culture heroics with a few well-chosen verbal interludes, including the following:

Question: What does Devo look for in a

girl?

Devo: Defects.

Question: How does Devo spend its leisure time?

Devo: Monitoring reality. We work 'round the clock.

Question: What is Devo lifestyle?

Devo: No style or new style . . . it's all the same.

Question: If Devo clicks in the fickle world of pop music, what will you do with your money? Any favorite charities?

Devo: We will be the first musical entity to undergo voluntary genetic mutation. A worthy cause is certainly the World Organization for the Advancement of Recomb DNA.

This year, Devo is *still* preaching the hazards/benefits of de-evolution. Currently putting the finishing touches on a second excursion into musical madness, Devo plans on touring the nation within months, instructing humanoids everywhere on how to accept their fate. It is inevitable for humankind to revert to spud-dom, or nurd-dom, or simp-dom, cowering forever in the shadow of the new machines. Devo doesn't care. They have their schizoid gospel to cling to.


"It's a valid use of energy," they stress in regard to their thinking. "It makes as much

sense as Einstein's theory, or the Bible and much more sense than trying to decide whether to vote for a Democrat or a Republican."

And just to show their fans that they are not all-talk and no-action spuds, Devo themselves have attempted to hasten their own personal sense of de-evolution by moving from hometown Akron to Musictown . . . Los Angeles. "Los Angeles is the asylum for midwest people who couldn't handle the Protestant Work Ethic," Mothersbaugh explains. "They can be pinheads here because the climate allows it. We'd already assimilated Akron's rubber pollution. But the air in L.A. looks like the movie *Soylent Green*."

Now, with stardom/freakdom just over the horizon, Devo apparently has it made, devolving within the snug security of L.A.'s yellow-soot smog. How progressive can you get?

Question: What is Devo's message for the youth of today?

Devo: Don't be uglatto, go mutatto . . . or weave to the left, bob to the right or be a flat tire on the highway of life! 



The Re-making of Star Trek

Creator Gene Roddenberry tells about the "Enterprise" crew's "family reunion" and promises that everybody—die-hard "Trek" fans and casual science-fiction buffs alike—will love the big-screen version of the TV show that wouldn't die.

By CHARLES BOGLE

In the distant 23rd century, three Klingon vessels casually patrol their own reaches of deep space. Without warning, their routine mission turns into disaster. They are suddenly confronted by an unknown and awesome alien intruder. Before they can mount a defense, the Klingons—the most fearsome warriors known to humankind—are totally obliterated. The massacre

stuns Federation viewers at Starfleet monitor station *Epsilon 9*.

At Starfleet headquarters in San Francisco, even more ominous news arrives. The marauding alien force is headed for Earth at Warp 7 speed. Starfleet springs into action! The U.S.S. *Enterprise*, completely refurbished, is ordered back into immediate service to combat the alien force. Captain James T. Kirk is summoned to take command of the starship once again. Orbiting in

dry dock high above San Francisco, the *Enterprise* is soon filled with familiar faces: McCoy, Scotty, Uhura, Chekhov, Christine Chapel, Janice Rand and, eventually, Spock are reunited in an attempt to save Earth from certain doom.

As the *Enterprise* glides into space, a new era dawns. . . *Star Trek—The Motion Picture* begins. Currently in its seventh month of production on Paramount's massive West Coast lot, the \$25 million *Star Trek* is



PHOTO © 1978 PARAMOUNT

Above: director Robert Wise (left) joins Gene Roddenberry, William Shatner, DeForest Kelley and Leonard Nimoy on the bridge of the new *Enterprise*. Left: a pre-production painting of the starship in space by artist Mike Minor.

ART: © 1978 PARAMOUNT/MIKE MINOR

being touted by studio heads as the ultimate science-fiction screen adventure. Helmed by veteran Trek producer/creator Gene Roddenberry and directed by Academy Award winner Robert Wise, the movie is the culmination of a dream; a dream with its roots in a decade-old TV series that simply refused to die when the network called it quits.

Reuniting the entire cast of the original show, plus a few new faces (Persis Kham-

batta as Navigator Ilia and Stephen Collins as Captain Willard Decker), the movie, according to producer Roddenberry, will deliver *all* the magic that longtime *Star Trek* fans expect... and then some. In the midst of ongoing executive meetings and script conferences, the genial Roddenberry is admittedly guarded when it comes to key details about the top-secret project. (Security is so tight on the set that even the president of Gulf and Western—Paramount's parent

company—was nabbed by studio security guards for not having proper identification.) Roddenberry does, however, agree to offer a tantalizing glimpse of things to come.

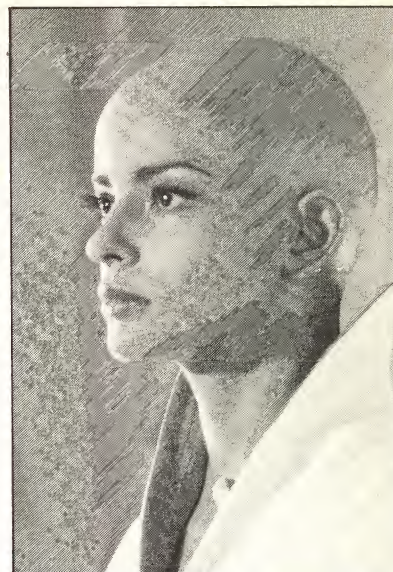
"We'll finish the live-action shooting by the end of December [1978]," the sandy-haired six footer says by way of a status report. "Then, we'll go into post production and optical effects work for nearly a year. We're still hoping for a Christmas of '79 release."

As he has stated time and time again for the benefit of worried fans, *Star Trek—The Motion Picture* will retain all of the flavor of the classic TV series but will expand its scope to fit its current big-budget, wide-screen status. "There will be quite a few innovations in the film," he reveals. "Our weaponry will essentially be the same as on the old show: phasers, photon torpedoes, etc. But we'll be using the advantage of full-screen optical effects to make their usage much more exciting visually. We'll also show a lot of new aspects of the *Enterprise* and her crew. We'll see Spock's planet, Vulcan. We'll have sets depicting the *Enterprise's* hangar deck, Kirk's cabin, Spock's quarters and the inside of Klingon cruisers."

Other new wrinkles will involve the portrayal of the refurbished *Enterprise's* outer hull and her crewmember's approach to same. "We'll see the *Enterprise* in dry dock in fantastic detail," Roddenberry states. "For the first time ever we'll get an idea of the true size and complexity of this craft. We'll also have a new type of Federation spacesuit this time out. It won't be radically different from the type of spacesuits that are being used today, just modernized. It will be more refined, more maneuverable. It will have more capacities, as would be natural for a suit constructed in the 23rd century."

"These are the kinds of suits that the *Enterprise* crew will be able to venture outside the craft in space with. We will see our people outside the *Enterprise*. This is something we could never afford to attempt on TV. And this, of course, will help us give an indication of the immense size of the starship."

With all systems currently go on the



PHOTOS © 1979 PARAMOUNT PICTURES

Actress Persis Khambatta before and after entering the world of *Star Trek—The Motion Picture*. In order to prepare for her role as new crewmember Navigator Ilia, the former Miss India was asked to shave off all her hair. She did so, publicly, with an army of TV and newspaper photographers present.

movie and with its already grandiose budget increasing almost monthly to allow for bigger and better special effects, Roddenberry hastens to explain that this titanic *Star Trek* will not be a stereotypical Hollywood "epic," but rather, a story with a lot of heart. "The aspect of the film that seems to worry our fans most," he begins, "is its budget. They hear we have \$4-5 million for optical effects and they ask, 'You're not going to just make a special effects movie, are you?' The answer is absolutely not. The *Star Trek* format has always called for the optical effects to work *through* the people. In other words, we don't stage effects just because, 'Wow, it's a really beautiful effect.'"

"The effect has to be part of the story. It has to affect Kirk, Spock and the other people inside the ship. The optical-effect tail will not wag the dog in this movie. I'd like everybody to know that. We will not throw in any razzle-dazzle without a reason."

This over-inflated shadow cast by the new *Star Trek* even made the veteran cast jittery at first, says the producer. "The question that the actors had on their minds was, 'Will it be *Star Trek*?' Before they came on the set, they were afraid that the *Enterprise* wouldn't be the *Enterprise*. It just wouldn't *feel* right. But when they came 'aboard' they were pleasantly surprised. Yes, the ship has been through some changes. There are many new details on the bridge. But it is still the circular *Enterprise*

bridge. The stations are still there. They are just better, finer. Each includes complex instrumentation we could never afford before. Our TV computers were made out of wood. Now, we actually have real computers. Each station is an entity unto itself and the actor helming his or her station has to learn how to work it. As soon as the cast began shooting on the set, everything got very relaxed. Homecoming."

With the cameras rolling, Roddenberry discovered that some of the newer *Enterprise* members didn't seem all that comfortable aboard the massive starship. With time, however, that situation resolved itself completely. "When you have a group of veterans who know their parts," Roddenberry says, "it's only natural that the new cast members feel like outsiders for a while. But, in a production of this length, that feeling dissipates with each new day. Now, *everyone* is an insider."

Helming the welcome wagon for the new crewmembers is director Robert Wise, a motion-picture talent whom Roddenberry praises to the heavens. "It's just been wonderful visiting the set," he beams. "Robert Wise has *really* gotten into this, starting from day one. The first day of shooting we shook hands and agreed that this would be a collaborative effort, a partnership. I would bring my knowledge of *Star Trek* into it, my experience in science fiction, and he would bring his knowledge of motion-picture techniques and the use of wide-screen. We promised to pool our knowledge and that's exactly what we've done. He checks with me about *Star Trek* details and I go to him when I want to know about aspects of movies I never encountered with the TV show."

"Those first days on the set, there was an enormous feeling of *deja vu* for all of us in-

(continued on page 64)



Fresh from his science-fiction success in *Invasion of the Body Snatchers*, Leonard Nimoy recreates his best-known genre role, Vulcan Mr. Spock. He joins the crew of the *Enterprise* en route to their encounter with a marauding alien force. Spock, at left, is shown seated on the new and improved bridge set.

Make plans now to become a billionaire space mogul!

Remember the gold rush of '49? Tens of thousands of people trekked across the North American continent, braving drought, hostile Indians and narrow mountain trails. A lot of them got rich.

We all know about the gold prospectors who became overnight millionaires. Do you know who else got rich? Egg peddlers and laundrymen! History tells us that when the economy is exploding with wealth, anyone can get rich.

Some people will try to tell you that the days when an ordinary person can get rich are over. They think you have to be lucky, or a crook, or a rock musician—or all three combined—to make it big. Maybe they're partly right. . . today. But the future will be different. *Much different.*

(If you pursue wealth there will be people who will try to make you feel bad about it. To hear them talk you'd think "profit" was a dirty word. They think anybody prosperous enough to disqualify for food stamps must be a subversive. They think people who are greedy capitalists plotting to own businesses and defraud the consumer and oppress the worker.

If you believe any of that, stop reading right now because you're hopeless!) Now that those wimpy, anti-wealth turkeys are no longer reading this column, let's get down to some specifics about getting rich in the future.

What's going to be so different about the future? We're opening a new frontier, the space frontier, an incredible cornucopia of wealth as wide as the universe! In the short run we'll be building enormous solar power satellites to produce *trillions of dollars* worth of power for Earth. . . space relays for wristwatch-size radio telephones that will allow people to call up anyone else on the planet or in orbit for 50¢ per call. . . space colonies housing millions of people—including egg peddlers, laundry technicians and thousands of other small business owners.

And that's just the short run. Thanks to advances in life extension, you can plan on being in on the action as we reach for the stars and travel from galaxy to galaxy. Gee whiz, that's great—but just how are we going to get in on that action?

You don't have to be born rich, lucky or have a college degree to start building your empire as a billionaire space mogul. But before we go any further, let me warn you: there is no guarantee that everything you try will work out. There's nothing sure in this world except death and taxes. (Off-world, who can be sure about either one?)

Are you still with me? Okay, you're the sort who's not afraid to

take a risk. And that's the one and only qualification you *absolutely must have* to get rich.

The first step towards wealth is to get some seed money to work with. You don't need much. Twenty-two year old Terry Savage and several friends in Redondo Beach, California, created their Space Investment Club by pooling together \$500. They plan to be among the very first investors in International Satellite Investments, Inc., a company that hopes to build solar power satellites for billions of dollars—then sell them for trillions of dollars. By investing the club's money as a block, they will save money on broker's fees. And because they met the president of the new company before it completed Securities and Exchange Commission procedures and went on sale to the public, they'll be able to get in on the ground level.

More important, they are proving themselves to be what the SEC calls "sophisticated investors." Why is that

important? Well, it seems that SEC investigators are the Cylons of the space mogul business.

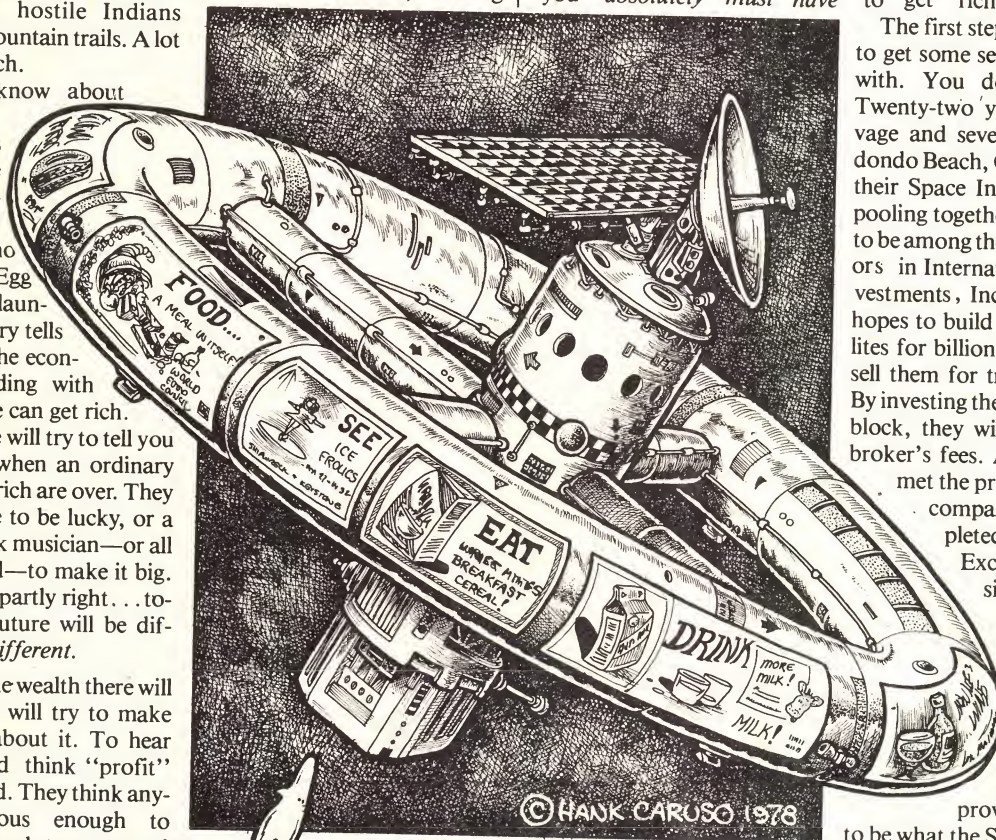
What does the SEC do? It enforces laws that were designed to keep you from losing your money. An unfortunate side effect is that it also makes it very hard for the small-time entrepreneur to *make* money. For instance, if I were to tell you, in this column, about a "private" corporation which could make billionaires out of all its early shareholders—and if I have the sense to invest in that company myself—I'm in deep trouble. The SEC will toss me in the clink for trying to fleece the innocent.

But—you've read those announcements of stock for sale, haven't you? Oh yes, by paying a heap of lawyers \$100,000 per year, it is possible to get the SEC to rule that a company is sufficiently virtuous to openly invite people to invest in it.

The catch is that by the time a corporation can afford that kind of a lawyer budget, it has grown beyond the stage where your \$500 investment could grow to a \$5 million fortune. The trick is to get in early—and to do that you have to outfox SEC rules which keep the really big opportunities secret.

Thanks to the SEC, you are forbidden to join Terry Savage's Space Investment Club. But the young California space-moguls-to-be are willing to help you start your own club. Write to Terry Savage at 1900 Dufour #16, Redondo Beach, CA 90278 for details on how to take your first step to becoming a billionaire space entrepreneur—and that solar sailing yacht of your dreams!

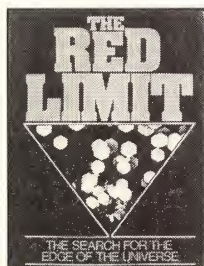
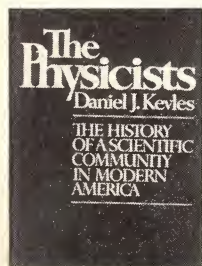
(Next time: tips on how to find out about space enterprises in the making.)



own businesses
defraud the consumer

Scientific Inventions and Inventing New Science

Using modern science fact as a springboard, science-fiction writers take their best guesses, speculating about the effects that a scientific fact or concept might have on the world at large if carried to its logical (or sometimes illogical) extreme. A comparison of the predictions of science fiction and the actual advancement of science would make for interesting reading, considering the number of scientists who have been influenced by the genre.



At present, there are two excellent scientific histories to compare with some of your most treasured SF paperbacks.

The Physicists by Daniel J. Kevles (Knopf, \$15.95) chronicles the growth of American physics in the last century from an academic backwater to its present position in the vanguard of international science. Author Kevles, himself a physicist and historian, brings both the creators and creation of modern physics to light if not to life. The book is dry, not because the people or concepts are uninteresting, but because Kevles has traced the political as well as the intellectual history of the science. This is definitely a reference book — important, but stiff going.

Astronomers are given a more interesting treatment in **Red Limit** by Timothy Ferris (William Morrow, \$10.00). Ferris combines a clear, understandable overview of modern cosmology with lively portraits of the astronomers who developed it. The title refers to what has been called the most astonishing fact of the 20th century . . . the discovery that, if a galaxy is receding, its light waves will shift toward the red end of the spectrum. That led to the discovery of the expansion of the universe.

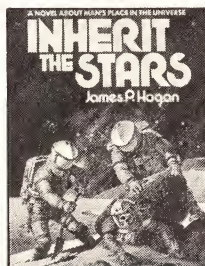
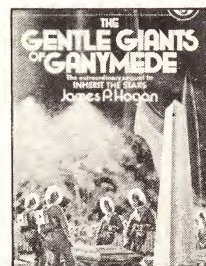
Through anecdotal tales of accidents and arguments, Ferris traces the development of astronomy, a science that less than a century ago knew little beyond its immediate stellar neighborhood. Today, of course, that very same science brandishes the knowledge that "galaxies exist, that stars are born and die, that the universe expands and was born in an eruption whose rumbling echo we can still hear." In *Red Limit*, Ferris points out

that the expanding concept of the universe may not be any more perfect than concepts that have fallen before. He emphasizes that what we know is a drop in the bucket compared to what we cannot comprehend. Even modern cosmologists, Ferris finds, believe that there are some questions that cannot be answered. Ferris notes astronomer and SF writer Fred Hoyle's summation of this astronomical dilemma: The answers aren't important; the questions are.

Science-fiction writers, of course, are perfectly comfortable dwelling in the nebulous area that lies between the known and the unknown. They love to ask questions. In the best tradition of imaginative scientist-SF writers is the work of James Hogan. He has recently completed three tales of mind-boggling superscience.

Inherit the Stars (Ballantine, \$1.50) begins in the not-too-distant future with the discovery on the Moon of a 50,000-year-old human corpse. An international team of scientists tosses theories about the mysterious remains at each other all the way to Jupiter, where they discover that 25 million years ago an advanced race in our solar system imported humans to their planet. The planet and advanced race have both since disappeared. The real mystery, though, turns out to be not how the corpse got to the Moon, but how the Moon got where it is.

The Gentle Giants of Ganymede (Ballantine, \$1.75) is Hogan's sequel to *Inherit the Stars*. A group of the advanced race—now identified as Ganymeans—shows up at the scientists' outpost on Jupiter after having lost 25 million years to relativity and bad brakes. The origins of the Ganymeans and



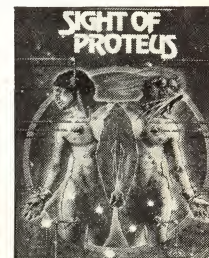
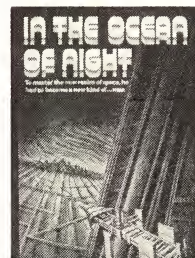
the evolution of the human race and the solar system are revealed in long theoretical dialogues. Finally the very polite aliens leave the system, hopelessly following the legendary trail of their race. In order to avoid depressing the reader, Hogan wraps it all up with an absurdly happy ending.

Hogan's **Genesis Machine** (Del Rey Books, \$8.95) is powered by a reactor containing a tiny artificial black hole. It can

peek into the next room or look into the heart of the Sun—and it can destroy almost anything it can see. The machine operates according to new rules of physics invented by Hogan and finishes the war to end war.

These three books are exciting if you like to watch ideas logically developed and explored. Hogan writes brilliantly readable theorizing. But like science fiction of yore, the characters are no more than voices for Hogan's theorizing, women are around mainly to serve coffee or drinks and anyone important is a white male scientist. Still, in these three volumes Hogan manages to tour the Moon, explore the process of scientific investigation and deduction, speculate on how an alien culture and biology would evolve, and propose and explain an alternate physics—all smoothly and in such a way that it gives the reader an appreciation of how real science works.

Sight of Proteus (Ace, \$1.75) is Charles Sheffield's first novel and it marks him as an imaginative newcomer.

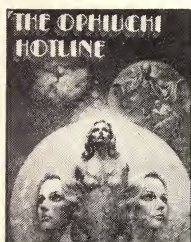


In the 22nd century, if you don't like the shape your body's in, you change it through computer-augmented biofeedback and chemotherapy. In fact, the only remaining definition of what is human is the ability to change.

But even in these enlightened times, there are experiments best left undone. Behrooz Wolf, intrepid agent of the Office of Form Control, has the unsavory job of seeing that some forms are not taken. He is obsessed by the case of Dr. Robert Capman, foremost expert in form change, who, like a 22nd-century Frankenstein, dares to create illegal new forms. Behrooz must catch him if only to find out what Capman's up to.

While this fast-paced chase novel stumbles occasionally as it takes you from an overcrowded, sometimes grotesque Earth into the asteroid belt on a mysterious mission, the final encounter with Capman's ultimate aliens is worth the price of admission. Sheffield is a talent to watch.

In the Ocean of Night by Gregory Benford, a West Coast physicist, (Dell, \$1.95) is a novel about change—interminable



change. When NASA sends Nigel Walmsley to blow up a comet to prevent it from crashing into Earth, he welcomes the adventure. But when he finds an abandoned alien ship at the center of the conflagration instead of the expected kilometer-wide rock, he risks the lives of millions to explore it. Later, although relegated to the relative backwater of a planetary monitoring team because of the uproar, Benford's hero detects a second alien visitor to the system and finds himself back in space for the first time in 15 years. There, the Snark, a robot emissary that spent time on Earth sharing Nigel's body and animating the corpse of his lover, tells him of a universe full of machine civilizations that fearfully hide from unstable organic lifeforms like humankind.

While the Snark provides the world with a new religion, Nigel's encounters with things alien leave him little changed. He is still too easily able to ignore a world that sounds like an advanced case of urban squalor complete with killing pollution, frightened masses of people and drastic shortages. Ultimately, Benford's characters are disappointing. Though richly detailed, they are rigid beyond belief. For Nigel to

change he must have a climactic encounter and literally be reprogrammed. Taken separately, these encounters are striking and well handled, but seen as a novel following the development of a single character—Nigel—the book strains the reader's credulity.

John Varley is the only one of these four science-fiction writers who isn't a card-carrying scientist, and his work is, not surprisingly, the most iconoclastic.


The Ophiuchi Hotline (Dell, \$1.50) is set 500 years after enigmatic Invaders have forced the human population off Earth in favor of the planet's truly intelligent species: sperm whales, "killer" whales and bottle-nose dolphins. It is also 200 years after the discovery of a laser communication beam apparently coming from 70 Ophiuchi, a star 17 light-years away, that carries such survival lore as how to extend your life, manipulate genes and use quantum black holes to power cities and ships.

Some of the people of the Eight Planets hope to retake Earth. Boss Tweed, head of the Free Earthers, kidnaps genetic lawbreaker Lilo-Alexandr-Calypso from Death Row to use her in his campaign to liberate Earth from the Invaders. He sends her to study Jupiter—a planet where the Invaders have also banned humans because of a race even more intelligent than Earth's cetaceans. Lilo is such a hot number that crafty Tweed makes an extra copy of her, and soon her unwitting clone is dispatched to find out about the newest thing off the Ophiuchi Hotline—a bill for services rendered.

This book is a dazzler. Varley's science is

so advanced that it seems magical, but his Eight Worlds set is seamless. As you watch people change limbs and looks, walk naked into space or talk about making a fortune catching black holes, his characters seem too comfortable and sane to doubt.

Varley's newest book **Persistence of Vision** (Dial Press/Quantum Science Fiction, \$9.95) includes nine stories, four set in the Eight Worlds and five others establishing five other places as wildly and well imagined. This collection should establish Varley as one of the major new talents. These nine gems include the story of an unwilling young hero lost in the memory of a computer, three unique looks at love and one story in which the scenery has been outdated by recent scientific discovery. "In the Bowl," an intriguing search that turns up unexpected treasure, takes place on Venus, where until recently it was thought that light passing through the thick atmosphere would be bent so that wherever you stood on the surface it would appear that you were at the bottom of a huge bowl. Hence the story's title and the technical mistake. Although recent findings have disproved the premise, it is of no consequence to the beauty of Varley's story, only dating it.

All literary speculators, whether they be science-fiction writers or mainstream scientists, run the risk of being caught out on a limb when they reach into the field of the unknown; when they predict. No matter what the factual results, however, the excitement of asking the question, the possibility of shedding light on the unknown, makes the risk-taking well worthwhile. 

Books in Brief

Classic Science Fiction: The First Golden Age edited by Terry Carr (\$14.95 in hardcover from Harper). Terry Carr has assembled a perfectly delightful flight into futuristic fantasy, using stories culled from science fiction's early 1940s heyday. Both the classics and the obscure gems are represented herein, with such authors as Asimov, Del Rey, Van Vogt, Sturgeon and Brackett offering vintage wares. Among the best of the bunch are Henry Kuttner's frantic "The Twonky" (how do you cope with a radio-victrola with a mind of its own?), Del Rey's "The Smallest God" (a figurine is accidentally imbued with life by a well-meaning scientist) and Wollheim's "Storm Warning" (did you know that the Earth's atmosphere is inhabited by intelligent, gaseous life forms?). Sometimes silly, sometimes sobering, *The First Golden Age*

is more than a nostalgia trip... it's first rate reading. (*Ed Naha*)

Dawn of the Dead by George A. Romero and Susanna Sparrow (\$7.95 in hardcover from St. Martin's). In the not-too-distant future, the world is faced with an unearthly menace straight out of a 1932 Universal fright film. The dead live again. For some scientifically unexplainable reason, the brains of recently deceased citizens refuse to "shut down," seizing control of the bodies instead and spawning an army of killer cadavers... a legion totally dedicated to the butchering of the human race. Rather than concentrate on the world's reaction to this horror, or the medical communities' attempt to combat it, Romero and Sparrow zero in on the plight of four frightened individuals attempting to stave off an undead attack in an abandoned shopping center.

Dawn of the Dead is an engrossing Alamo-esque tale of survival until, half-way through the book, one realizes that the four characters are neither sympathetic nor particularly interesting. By the finale it's the dead vs. the dullards and nobody is keeping score. (*William Pratt*)

Make Us Happy by Arthur Herzog (\$8.95 in hardcover from Crowell). About as subtle as a rousing rendition of "The Anvil Chorus," Arthur (*The Swarm*) Herzog's newest futuristic novel is a cross between Aldous Huxley outtakes and a Roadrunner cartoon. Set in a sterile society-to-come run by computers, this serio-comic tale pits hapless heroes Bil and Alce against the very fiber of society itself... their master computer. Eventually it boils down to a man vs. machine confrontation with the pair banding with a few friends and searching for

Books in Brief

their metallic monarch in a nuts and bolts version of *The Inferno*. Along the way, Herzog manages to introduce flashes of elementary school psychology and equally as lofty punning. (In the Sex Olympics, for instance, one of the big events is "broad jumping." Clever, eh?) Despite the presence of a myriad of lampooned SF clichés, *Make Us Happy* doesn't. (Joseph Kay)

The Avatar, by Poul Anderson (\$10.95 in hardcover from G. P. Putnam's Sons). A superior alien race called "the Others" supply humanity with the key to the stars—immense space/time transport machines are spotted throughout the galaxy, each one offering an enormous variety of exit points. Will humankind accept the legacy of interstellar travel? The inhabitants of Demeter, first planet to be colonized by Earth through use of the "T-machine," are all for it. But Earth has been undergoing substantial political and social turmoil and the ruling planetary party is against further extraterrestrial exploration. Tension is heightened when an alien craft emerges from the machine near Earth.

Anderson's characters are richly drawn and, in one or two cases, deeply felt. Although the plot material is fairly standard, Anderson uses it well to take him where he wants to go. For the true triumph here lies in the author's decision to tackle questions of import to the present generation as well as those concerning the human psyche in general and, ultimately, the essence of life in the universe.

The novel does have its faults, but they are most assuredly outweighed by its spirit and skillful execution. *The Avatar* is an important contribution to the body of SF literature. (Howard Zimmerman)

Jules Verne—Inventor of Science Fiction by Peter Costello (\$10.95 in hardcover from Scribners), **The Annotated from the Earth to the Moon** by Jules Verne, translated by Walter James Miller (\$16.95 in hardcover from Crowell). These two volumes should keep the legions of Jules Verne fans content for a while, spotlighting both the man and his work. Costello's biography effectively details the life of a writer he refers to as the "inventor" of science-fiction literature. Backing up his main points with vivid, illustrative anecdotes, Costello traces Verne's literary career, beginning with young Parisian Jules' fling at romantic playwriting and concluding with the elder Verne being acknowledged as a master storyteller with such classics as *20,000 Leagues Under the*

Sea, *Mysterious Island* and *Journey to the Center of the Earth* to his credit.

Walter James Miller's new translation of *From the Earth to the Moon* supports Costello's claim that Verne was not at all a "young boy's author" but, rather, a novelist extraordinaire. Miller, using Verne's original French text as a guideline, re-tells the well-known tale, reinstating many of the passages and plot details originally lost in the hastily done American translation of the novel. In addition, copious footnotes explain unfamiliar terms and historical implications. Many of the illustrations from the original French edition are unearthed as well. Both books, taken as part of a whole, provide a fascinating insight into the embryonic years of science fiction.

(Charles Bogle)

The Secret of the Marauder Satellite by Ted White (\$1.75 in paperback from Berkley). From the late forties through the close of the fifties, Robert A. Heinlein wrote a dozen magically inspired stories involving "ordinary" body in the scientific discovery of the wonders of the universe. Good as they were, these books lost much of their relevance with the social upheaval and leap-frogging technological advances of the sixties.

Ted White set out to update the Heinlein template in 1965 by incorporating Apollo-era technology and realistic motivation for his story's young hero. Thirteen years later, *The Secret of the Marauder Satellite* finally sees its first paperback edition, and the book holds up remarkably well.

The story of Paul Williams' first trip into space as part of a new NASA program is pure R.A.H.—if Heinlein could have talked to the children of the sixties. Paul's first moment of free-fall is breathtaking and his bizarre encounter with an alien energy-absorbing satellite is icing on the cake. But Paul's triumph over the hazards of space is not the reader's strongest impression: instead, there is a tangible sense of loss for a space program that at the writing of this book seemed destined to go so much further and faster than it has. (Lou Stathis)

Infinite Dreams by Joe Haldeman (\$8.95 in hardcover from St. Martin's Press). Joe Haldeman knows how to make an entrance. He knocked everyone for a loop when his first SF novel garnered him both the Hugo and Nebula awards, and then before we got our breath back, his second novel made him (for a short time) the genre's highest-paid scribe. Haldeman's newest offering collects 13 of the stories that

put him on the fast track to the top.

The stories range from an early effort, "Counterpoint" to the 1977 Hugo award-winning "Tricentennial," showing the evolution of Haldeman's clean, biting style. Interestingly, several of these stories foreshadow his later, longer efforts. "To Howard Hughes: A Modest Proposal" and "26 Days, On Earth" are both written in the scrapbook/journal style that was the most interesting thing about *Mindbridge*. And "A Mind of His Own" watches as a bitter young warrior has his mind changed in much the same way that the main character is rearranged in *All My Sins Remembered*.

This retrospective is interesting in that it shows us where one of the field's brightest new stars came from and hints at where he's going. (Bob McCoy)

Messages from the Stars by Ian Ridpath (\$10.00 in hardcover from Harper & Row). Although not currently a popular topic in most governmental circles, the idea of communicating with extraterrestrial life has appealed to humanity for centuries. In this exceedingly readable, detailed tome, author Ridpath (compiler of *The Encyclopedia of Astronomy & Space*) attempts to explore every possible angle of the "I'm OK, you're ET" concept. In fact, if there is any fault to be found in this book, it arises because of the hefty amount of information Ridpath attempts to gather under the extraterrestrial umbrella.

As well as detailing the progress of such factual searches for alien lifeforms conducted by the dedicated scientists found in projects SETI, Ozma, Cyclops and the various attempts made by Carl Sagan, Ridpath introduces ET-oriented speculation to the text. What will the first starships look like? When will they be built? What will the consequences of ET communications mean politically?

Stretching the boundaries of the book even further, the author also devotes space to the concept of man-made space colonies, the origins of stars and planets, the Viking landing on Mars, Betty and Barney Hill's UFO abduction, the Ancient Astronaut hoaxes of recent days and various fraudulent UFO "sightings." Despite Ridpath's concocting a literary stew of helter-skelter imagery within its pages, *Messages from the Stars* offers a cornucopia of fascinating information. Energetically written but haphazardly constructed, the book takes its readership, literally, out of this world. (Ed Naha)

FUTURE GALLERY

Ludek Pesek

The fabulous off-world landscapes of Ludek Pesek are highlighted in this issue's "Future Gallery"—and on the contents page at the beginning of the magazine. Pesek (pronounced Peshek) is a Czechoslovakian expatriate who has lived in Switzerland since 1968. Born in 1919, Pesek embarked on his artistic career while he was a student.

"I was bored with physics," Pesek recalls. "While our professor lectured on the composition and orbits of the planets of the solar system, I drew lunar landscapes in the copybooks of my schoolmates. The mathematics scattered about on the blackboard was too abstract for me. Fanciful landscapes meant much more.

"As a middle-aged man, I decided much sooner than Armstrong, Aldrin and Collins to



leave the planet Earth."

Obsessed with the desire to make his extraterrestrial landscapes as accurate as possible, some of Pesek's off-world visions nevertheless became dated as astronomers and planetary scientists gained new knowledge.

The sweeping centerfold panorama (on the following pages)

which depicts a dramatic dust-storm on Mars was painted just prior to the time when Viking spacecraft landed on the surface of the red planet.

Before Viking's probes landed, there were two schools of thought about the color of the Martian sky. Some said red, others thought blue. Pesek went with

blue. Viking settled the argument: the Martian sky is red. That fact—rather than detracting from the impact of the painting—preserves a bit of history about concepts of pre-Viking Mars.

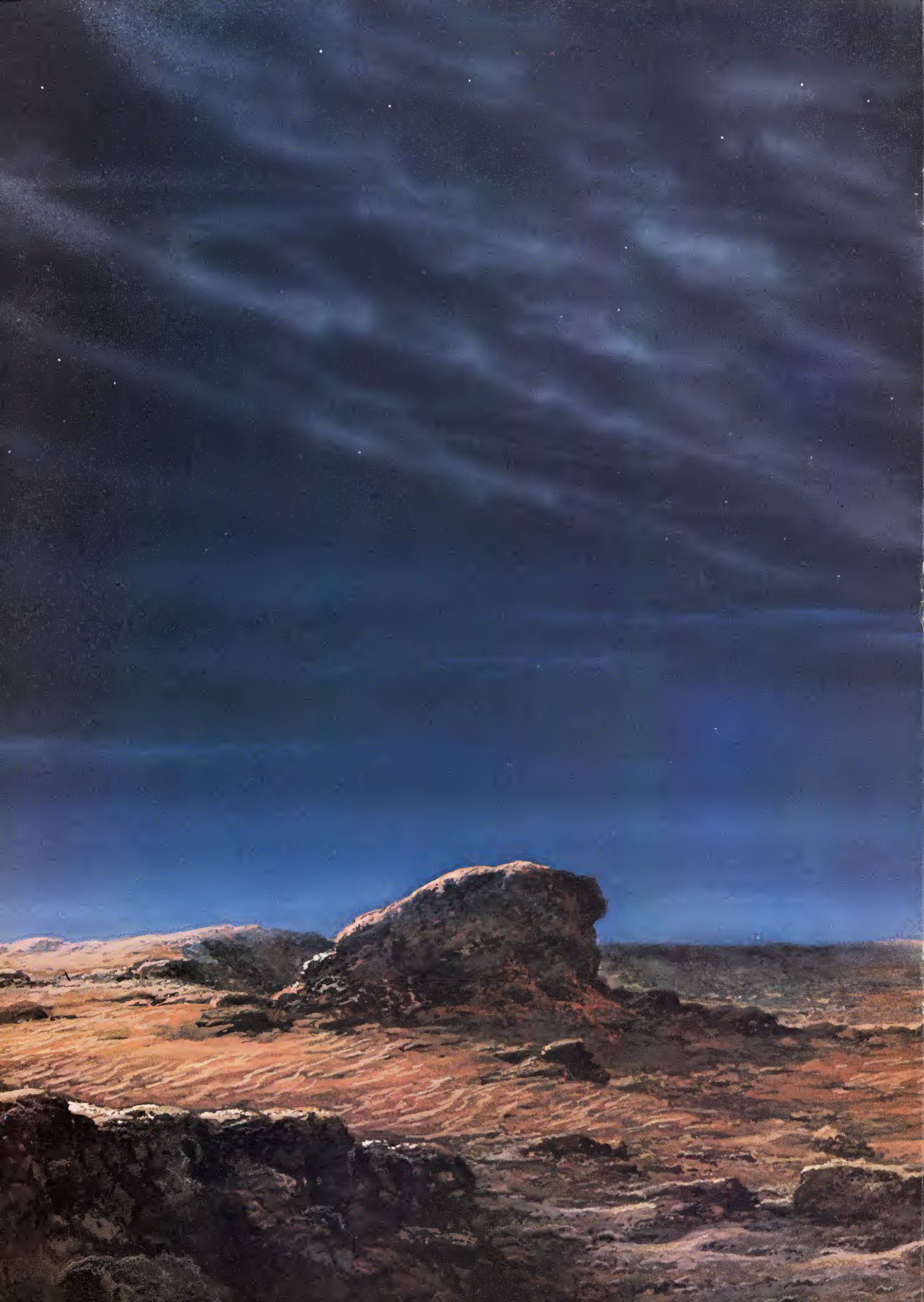
"Unfortunately, astronomers like to use words like 'perhaps,' 'probably' and 'it is possible,'" Pesek notes philosophically.

The versatile Pesek has also written and co-authored many books, including two science-fiction novels. (One science-fiction title, *The Earth Is Near*, is currently in print from Dell.)

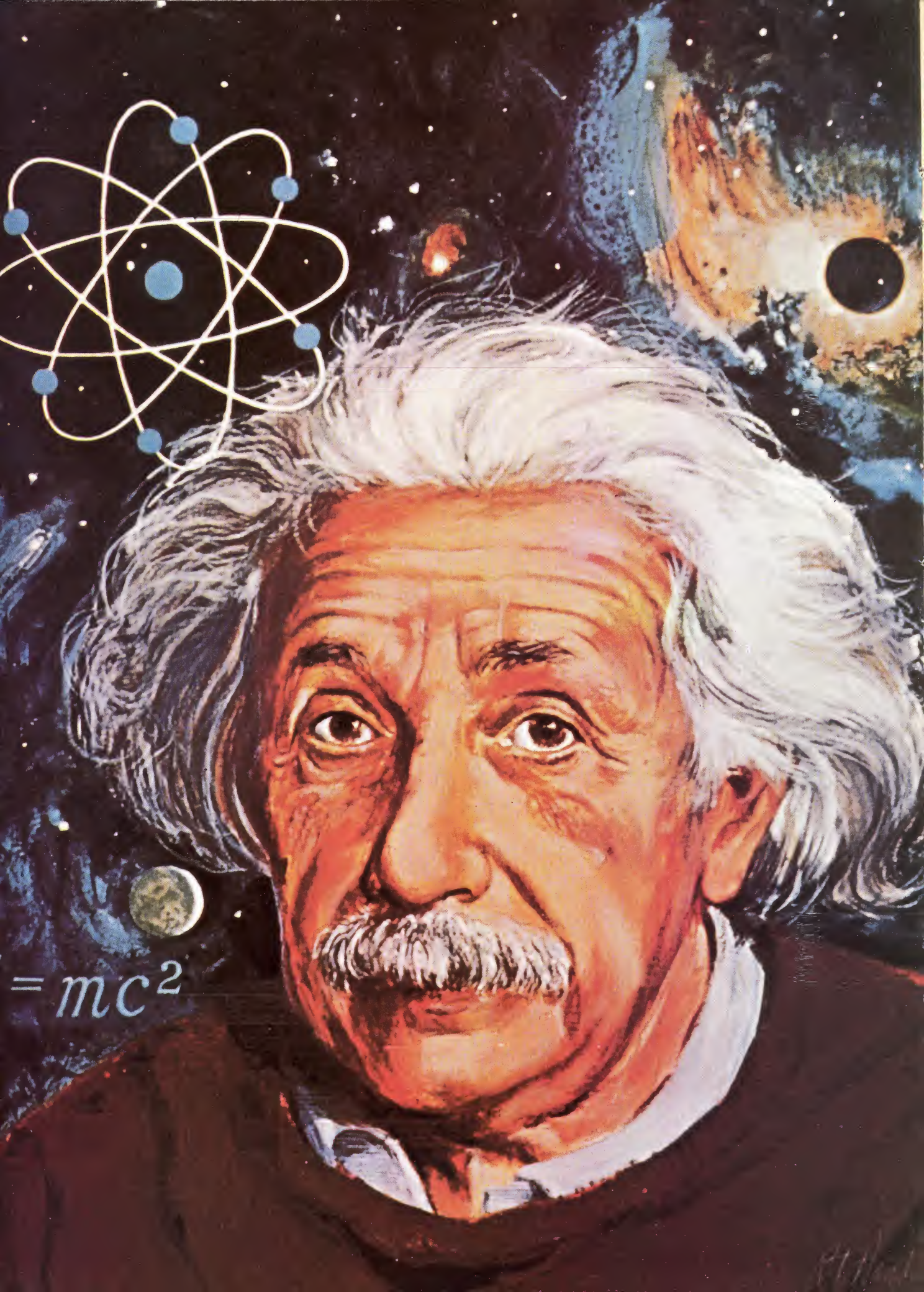
On this page is Pesek's rendition of a view of Mars from its tiny moon, Deimos (in foreground).

Says Pesek: "Perhaps, after many years of thinking in terms of extraterrestrial space, I may have lost contact with Earthly dimensions. But if I have, I do not suffer from the loss." □

Centerspread: "When the Martian Sky Was Blue" by Ludek Pesek →







$$E=mc^2$$

On Einstein's 100th Birthday, researchers rediscover the man who was overshadowed by his own myth.

Searching for Albert Einstein

By ED NAHA

When a man, after long years of searching, chances upon a thought which discloses something of the beauty of this mysterious universe, he should not be personally celebrated," Albert Einstein once told the National Academy of Science. "He is already sufficiently paid by his experience of seeking and finding."

During his lifetime, Albert Einstein was, to many, the personification of the scientific community. Indeed, to millions of global citizens, he *was* science. In the eyes of the world, he was a living legend, a cerebral high priest, a modern myth. Somehow, Einstein the man coexisted peacefully with Einstein the myth for years, showing signs of bemused irritation only on rare occasions. At one testimonial dinner, for instance, after a particularly long-winded speech, he was heard to comment politely, "I have just got a new theory of eternity."

Next month (March 14) marks the 100th anniversary of Einstein's birth. The occasion will be celebrated around the world, with most of the Centennial events being befittingly down-to-Earth. Appropriately so, in that Einstein, the master thinker revered for the formula of mass-energy equivalence ($E = mc^2$) always saw science as a logical extension of everyday life itself.

He didn't particularly relish being called a "genius." As a child, in fact, he nearly proved otherwise, showing no great interest in science whatsoever. Born in Germany in 1879, the scholar-to-be proved a marginal student at best. By the age of 12, however,

he had decided to devote himself to solving the riddle of the "huge world" around him. His theory of relativity had beginnings in an essay written at the age of 16.

His ideas were published proper in 1916. His basic premise stated that gravitation was not a force, as Newton had said, but a curved field in the space-time continuum, created by the presence of mass. By 1919, Einstein was an international figure. As his fame grew in his post-relativity years, the scientist began to use his position as a lever in influencing world affairs. An ardent pacifist and Zionist, he spoke out on behalf of human rights throughout his lifetime. Leaving Nazi Germany in 1933, he came to America, accepting a full-time position as a foundation member of the school of mathematics at the new Institute for Advanced Study in Princeton, New Jersey.

By this time, his research involved his ill-fated "Unified Field Theory," a concept he pursued unsuccessfully until his death. Basically, Einstein felt that there was a common law of behavior governing everything in our universe from the tiny electron to the planets themselves. Even in the face of quantum theory (which he abhorred because it espoused a philosophy depicting the universe composed of random elements), he stuck to his unified concept, proposing it in the 30s and, again, in 1950. His reasoning for sticking to the idea of cosmically perfect engineering? "God is subtle," he explained, "but he is not malicious." Einstein, it seemed, believed in "Spinoza's God who reveals himself in the harmony of what exists."

In 1939, with war on the horizon, Ein-

stein was persuaded by some of his colleagues to write a letter to President Roosevelt urging the creation of nuclear weaponry. This letter was to haunt him for the rest of his life. In part, it inspired The Manhattan Project, the birth of the A-Bomb. Ironically, it was Einstein, the pacifist, who was thusly given the title of "Father of the Atomic Bomb," a stigma he carried until his death on April 18, 1955.

During the course of the next month or so, the world at large will be given a chance to reacquire itself with the genius of Albert Einstein via a flurry of activities designed to both conjure up memories of the Einstein years and introduce the legendary figure to a generation that has grown up since his passing.

Boston's prestigious WGBH, home of the award-winning PBS series *Nova*, will be presenting two Centennial shows devoted to the master scientist. One, *Einstein's Universe*, is a 90-minute special co-produced by WGBH and England's BBC network and features Peter Ustinov. Airing March 13, the show will be an exploration of Einstein's theory of general relativity in all of its modern ramifications.

The second offering, to be televised on March 15, is simply called *Einstein* and is part of the *Nova* season. Unlike *Einstein's Universe*, this presentation will explore not only Einstein the thinker but Einstein the man, the humanist and philosopher as well. Says the show's producer Patrick Griffin, "I think you'll see a view of Einstein that you're not used to seeing. He is not the high priest of science in our film. He's a human being, a man who sought order in all things."



PHOTO RICHARD MEEK

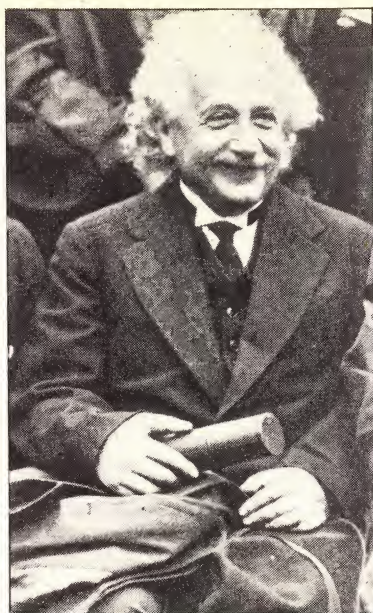


PHOTO NATIONAL ARCHIVES

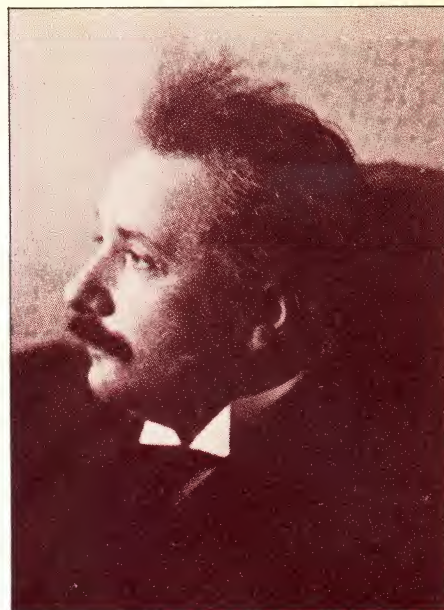


PHOTO LIBRARY OF CONGRESS

Left: sculptor Robert Berks puts a few finishing touches on his larger-than-life portrait of Albert Einstein, based on a life-sitting done in 1953. Above left: Einstein receives an honorary degree at Harvard in 1935. Above right: Albert Einstein in 1921, a science phenomenon in the making.

"The most difficult task for us to handle in producing this show was condensing, in a very short amount of air time, the immensity of his thought in science and the scope of his actions in history. Einstein was unique among his contemporaries in that he didn't 'burn out' in old age. He was absolutely active until the end of his life.

"We try to dispel a number of major myths while painting our portrait. Many people assume that when, in 1936, he began work on his unified field theory he simply disappeared from science. That's not true. He continued making valid contributions to both science and the entire world. He was extremely active in both World War II and the cold war period in working towards international peace. He was not only a spokesman for responsible scientists but for all the responsible people of this Earth.

"We'll be showing a lot of aspects of his personality that many people might not be aware of. He was not, as one might suspect, a recluse or a hermit. He enjoyed people. He believed in their basic goodness and he positively sparkled at social gatherings. He was very chic. Very outgoing.

"He was also very tolerant. As you know, he was connected in the public's eye with the development of the A-Bomb. He constantly tried to point out that he had nothing physically to do with it. That letter to Roosevelt plagued him for the rest of his life. There was an interesting exchange towards the end of his life between himself and a Japanese pacifist. The pacifist wrote 'how can you consider yourself a *true* pacifist having created the atomic bomb?' Einstein responded in a long letter. The fellow wrote again. 'I am not satisfied with your letter. You're not being honest with yourself.'

"Now, at that point, I think most of us

would have just written this guy off and crumpled up the letter. But Einstein continued to communicate. I think they exchanged letters three or four times before the man finally visited him at Princeton. This story indicates to me both his sensitivity in regards to his identification with the bomb and his yearning to communicate.

"I guess if I had to present one image of Einstein the man as we've come to know him during the course of this film, it would be an image on a home movie we found. Einstein is being taken to Catalina Island by notables from Cal Tech. In the corner of the frame, on the boat going over, is Einstein sitting in a chair. At first glance, you think he's giving an autograph to this honey blonde California co-ed. When you take a second look, you see that he's really doing her homework."

As well as the two WGBH shows, Einstein followers may immerse themselves in memory via Washington D.C.'s Smithsonian Museum of History and Technology's Einstein Exhibit opening the first week in March and continuing into March of 1980. Paul Foreman, Curator of Modern Physics, comments on the display. "I think someone visiting the exhibit will get an idea of what a complex man Einstein was. He was a man removed from the world of hurly burly, yet someone who remained earnestly concerned with that world's welfare."

Among the items on view will be some of Einstein's key manuscripts, correspondences with notable peers including Freud and Roosevelt, his Princeton blackboard, family album photos, his pipe, various portraits of the scientist showing him at different stages of his career, recreations of his different experiments, his immigration papers and a leaf from a 1930 autograph book featuring a rare self-portrait.


"This will be the only exhibit of its kind," says the museum's Geraldine Sanderson, "It's a three-dimensional portrait."

Sculptor Robert Berks plans yet another type of 3-D portrait. Unveiled on April 22 will be an Einstein memorial ... a statue three times life-size of the scientist. Placed on the Constitution Avenue grounds of Washington's National Academy of Science, the mammoth work is based on a portrait head of Einstein that Berks sculpted from life in 1953. Einstein was so pleased with the bust and Berks so moved by his encounter with the man, that the artist vowed to create a monumental statue that would capture both the splendor of Einstein's mind and the simplicity of his life. Twenty years later, Berks has nearly completed the task.

For the more cerebrally oriented, the National Air and Space Museum in D.C. will sponsor a free lecture by Princeton cosmologist P. James E. Peebles on "Einstein's Vision and the Discovery of the Expanding Universe."

In addition to the aforementioned events, the Einstein Centennial will be observed locally in different areas around the globe. No one can say for sure exactly how Einstein would have reacted to the exhibits, the specials, the speeches and the media events planned, but it's safe to say that he would have taken a stance marked with characteristic humility; humility reflected in a half-finished note found on his desk at the time of his death.

In part, it read: "What I seek to accomplish is simply to serve with my feeble capacity, truth and justice at the risk of pleasing no one."

No centennial celebration can hope to equal the grandeur found on that slip of paper. 

The Martian Chronicles: Literary Magic Comes to TV

“‘Let us agree to disagree,’ said the Martian. ‘What does it matter who is Past or Future, if we are both alive, for what follows will follow, tomorrow or in ten thousand years. . . .’”

The Martian Chronicles

In 1950, Ray Bradbury brought forth a lyrical novel that was destined to be regarded as a classic of science-fiction literature, *The Martian Chronicles*. Because of its philosophical, humanistic slant, the book became an immediate best-seller, mesmerizing imaginative readers from eight to 80. Composed of more than 25 vignettes, the book is basically a thematic construction, uniting a host of Bradbury's finest short stories published during the late 1940s. As a unit, *Chronicles* stands unsurpassed. Here is an alien encounter tale wherein both Man and Martian experience equal amounts of pride, joy, failure and sorrow. It is an adventure with heart. . . and soul.

Its crazy-quilt plot begins in January 1999, a “Rocket Summer” that witnesses the first manned expedition to Mars. Telepathically spotted by Martian maid Ylla and her parents, the Kis, the mission ends in tragedy. From that point onward, the book recounts humankind's attempts to both land on and colonize the Red Planet (under the supervision of one Captain Wilder) and ends its literary panorama in October of 2026, with the Martian race nearly defunct, Earth destroyed as the result of a nuclear holocaust and humanity seeking refuge on the tranquil Martian landscape.

For years, the book eluded Hollywood's grasp, with enthusiastic filmmakers trying in vain to capture the elusive spirit of the

Bradbury style. This fall, however, NBC-TV will make the impossible a reality, presenting a six-hour mini-series entitled, *Ray Bradbury's The Martian Chronicles*. Produced by Charles Fries and written by Richard Matheson, the three-part opus is a carefully assembled adaptation which utilizes most of Bradbury's original tales and all of his loving care. The entire production, according to Fries, was a real labor of love.

“We've been trying to do *The Martian Chronicles* as a television project for a number of years,” he says, “but no one was all that interested. With science fiction currently being ‘in,’ due to the success of *Star Wars* and *Close Encounters*, we found that a property that no one was really interested in for a number of years suddenly became very interesting to a lot of people.”

With a network clamoring for the show, Fries suddenly discovered that the financing required to do the book justice actually stood in the way of the production's progress. “Even after we had written the script and received a go-ahead at NBC, it was necessary for us to generate additional funds.”

A co-production deal with several European TV concerns boosted the budget to its necessary zenith. “NBC picked up the show in October of 1977,” Fries recalls. “I finally firmed up all our production details six months later. Shooting began in the fall of

'78. It took us two years to get the ball rolling—two years.”

During that 24 months of struggle, it never occurred to the producer to simply walk away from the difficult project. “It was too important to me. I think that the bulk of science fiction that's been (and is being) produced both theatrically and for television is a conglomeration of bits and pieces of all the science-fiction writing that has come down from people like Asimov, Heinlein, Herbert, Clarke and you name them. What happened in all the other projects, like *Galactica*, is that the writers read a lot of SF and took a little bit of everything, coming up with a mixture of concepts, a celluloid stew. I think the exciting thing about *The Martian Chronicles* is that it's going to be the first ‘pure’ adaptation of what is one of the most classic science-fiction pieces of all time. Our program is *Ray Bradbury's The Martian Chronicles*. That, in itself is a first.”

Writer Richard Matheson (author of *The Incredible Shrinking Man*, *Duel* and *The Night Stalker*) shares Fries' enthusiasm for the unique project, admitting that, “My main purpose in doing the project was to see how much of the book I could get in the final script. I don't like people who adapt a book and leave it unrecognizable. I think I've succeeded pretty well.

“Actually, it wasn't all that hard to adapt the book's vignette style to the screen,” he

continues. "People have been trying to make a screenplay out of the *Chronicles* since 1950 but they've failed for one reason: time. They've always tried to do the book as a two-hour film, which is impossible.

"One of the main reasons we were successful with it is that we had a six-hour format to work with, which boils down to about four hours and 46 minutes. That enabled us to use a more picaresque style, an anecdotal form which allowed us to present separate stories. This was really necessary because, although there was a consistent theme in his book, Ray's novel was basically a collection of distinct stories."

Although the TV show follows the original work closely, both Matheson and Fries admit that they have taken some liberties with both the characters and the sequence of events; liberties that were necessary in order to hold the interest of the audience. "Well, my main alteration concerned the enlargement of the Captain Wilder character," Matheson states. "I had to

make him a unifying factor, getting him to appear in as many of the short stories as possible, occasionally as just the 'host.'

"I think that was the one conceptual breakthrough we came up with that made it all jell for television," Fries agrees. "Wilder is now a central character of the show. We introduce him at the very outset of the production, in the control room in the mission-control center watching the first expedition take off. Rock Hudson, who stars as Wilder, is the touchstone of the show. He's a man of strength, stability and security. He brings a sense of reality, of humanity, to the Martian landscape."

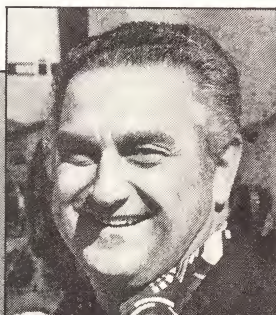
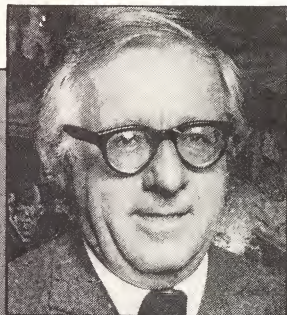
With Wilder now assuming command of the TV expeditions, Matheson found that a certain amount of streamlining had to be done concerning the rest of the novel. "We eliminated the stories which didn't contribute to the basic theme of *The Chronicles*," he explains. "The book really showed man doing irreparable damage to Earth and then coming to Mars and starting

to do the same thing.

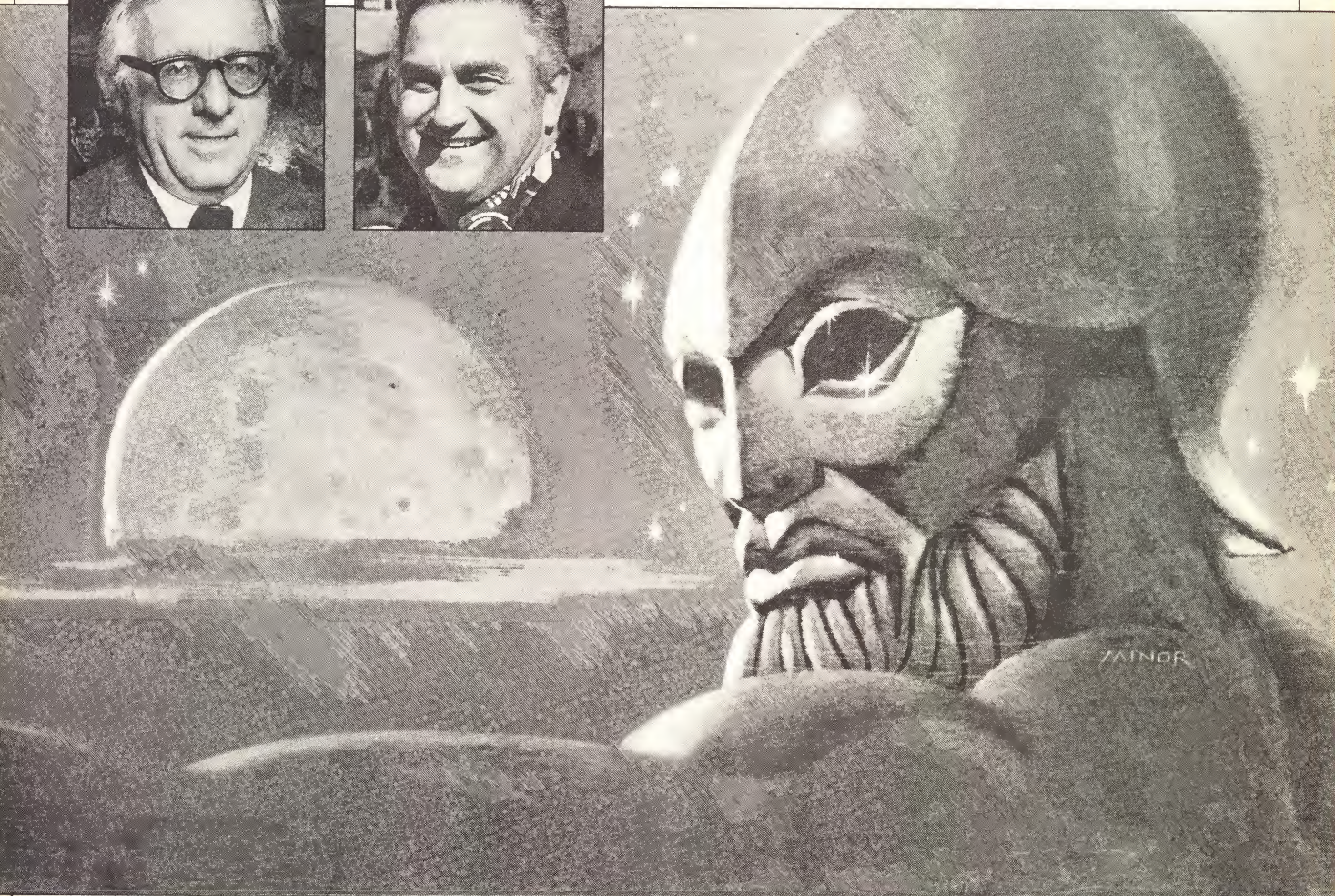
"We tried to eliminate some of the unnecessary subplots. We trimmed the second Martian expedition from the script, which I originally included when I was following the book exactly. I wasn't too unhappy to see that go, as well as some other plot twists. We eliminated the story 'Usher II,' for instance, which offers a story wherein a settler recreates Poe's House of Usher mechanically as an instrument of revenge. But it opened a whole area dealing with government censorship on Mars which just didn't fit in with our basic premise."

Alien activity felt the editor's touch as well. "At Ray's suggestion, I fudged a little when the Martians first appear, combining the story 'The Martian' with another tale. 'The Martian' featured a chameleon-like Martian appearing in different humanoid forms to different people, the other story had the alien appearing to the story's resident priest in the guise of Christ. They fit so perfectly together, we just linked them up.

PHOTO RICHARD TODD



Left: Ray Bradbury and producer Charles Fries. Below: a painting by artist Mike Minor done for the L.A. stage version of *Chronicles*.



ART © 1977 MIKE MINOR

"After the script was handed in, we were still making changes in the plotline, streamlining and enlarging Wilder's part even more. Sometimes it was a real challenge. For instance, figuring how to put him into the story of an automated house winding itself down on post-holocaust Earth without changing the story was a real trick. I think we pulled it off very well. Instead of just having a family perishing in this home, we had Wilder's brother's family. Wilder visits the dying house after the disaster and watches it grind to a halt. It worked nicely."

Producer Fries felt that he had to modernize the look of the classic book as well as doctoring the plotline. "We updated the feeling of the story," he stresses. "The book is three decades old. When you look at Ray's material you have to remember that he wrote it all during the 40s. Ray was from a small town in Ohio and it comes across in the book."

"On the second expedition, for instance, the Earthmen go down to a town on Mars which is really of a small American town design. Ray was visualizing Mars in the context of his own life."

"He wrote about the spaceships bringing up lumber to Mars in order to build all these very American Martian cities. But Ray was building those towns in a way he visualized based on the spirit of the 40s. Now, we thought, it's been 30 years. We know a lot more about space travel and colonization now. Isn't it really a bit ludicrous to have spaceships hauling hundreds of thousands of feet of lumber up to Mars?"

"So, our art director, who is very creative, came up with something that may sound crazy but worked wonderfully. He thought that we'd wind up colonizing Mars with some sort of modular concept, that we would build spaceships to which we could attach these pre-fabricated housing modules then build outward. These modules would be something along the lines of what we would consider a mobile home today."

"The space pioneers would haul these modules up to Mars and they'd be able to set them up in all sorts of different configurations. So, in our show, the character Parkhill's hot-dog stand and Wilder's home and the new towns have all been built out of these identical modular designs. We built about 1,000 of these structures using a plastic hot press. We built all of our towns out of these things, stacking them differently. To



ART © 1978 NBC

An early sketch used to depict a Martian makeup design for the forthcoming NBC event. This alien concept was later discarded altogether.

The Martian Chronicles

Produced by Andrew Donally. Executive Producers: Charles Fries, Richard Berg. Directed by Michael Anderson. Screenplay by Richard Matheson based upon the novel by Ray Bradbury. Art Director: George Djurkovic. Makeup: George Frost, Colin Arthur. Illustrator/sketch artist aerospace: George J. Izera. Modeler: Andrew Holder. Traveling Matte Consultant: Dennis Bartlett.

Wilder	Rock Hudson
Peregrine	Fritz Weaver
Parkhill	Darren McGavin
Father Stone	Roddy McDowall
Spender	Bernie Casey
Black	Nicholas Hammond
Elma Parkhill	Joyce Van Patten
Driscoll	Richard Masur
David Lustig	Michael Anderson Jr.

give it all sort of a conceptual Earth feeling, we tacked on a lot of neon signs and things that made it all look a little like Ventura Boulevard."

The rest of the modernization, says Fries, was less drastic but equally inventive. "The Martian sequences were actually the easiest," he states. "In essence, the Martians are in a period of time that, accordingly, you can free-ball and fantasize with, using some of Bradbury's ideas, some of your own, some of your special-effects man's and some of your art director's. The Martian city and Ylla's house are described in the book by Ray as being 'crystal.' Well, what does 'crystal' mean? It could look like anything from clear lucite to sand, right? We've come up

with a surprise that I think will keep everyone happy."

One of the chief surprises, for everyone involved, will be the appearance of Fries' as-yet-top-secret Martian citizens. Although author Matheson didn't intend his alien characters to be seen until the final portion of the three-part show ("I hope they can avoid showing the Martians in any physical way until a human, Wilder, confront one in the next-to-the-last sequence. I don't know how they can avoid showing them, though."), Fries had other ideas.

"We're going to show the Martians during the entire production," he says. "I think it would be cheating the audience to do it otherwise. I mean, imagine if the network

spaces the programs once a week for three consecutive weeks. To have to wait until the last 10 minutes to see a Martian would be very aggravating."

Both men agree that the show, not as yet slated for a definite air date, will shake up both the television and the science-fiction communities. "I'm very happy with the final script," Matheson beams. "It's literate, but it's simple and easy to understand. I think my burning desire during its writing was to come up with something that Ray Bradbury would be happy with. I think both Ray and his wife are pleased with the adaptation and that's very important to me. He's a friend and I respect him. I didn't want to do any damage to his work at all. I just wanted to be a shadow in the background, putting the script into shape."

"I think a good many people will be surprised when this airs. Science fiction on TV thus far has been all spaceships and semi-clad maidens running around. I don't think that there's really anything to compare this show to. There's never been anything like it. Television has never approached science fiction in an adult, poetical way before. And *The Martian Chronicles* is an adult, poetical saga."

"The mask floated on the wind. 'We leave you. Prepare. The land is yours.'"

In the glowing moonlight, like metal petals of some ancient flower, like blue plumes, like cobalt butterflies immense and quiet, the old ships turned and moved over the shifting sands, the masks beaming and glittering, until the last shine, the last blue color, was lost among the hills."

Ray Bradbury

Movie houses offer the ultimate in today's mass entertainment, but your local planetariums will be the . . .

Theaters of Tomorrow

By PHILIP L. HARRISON

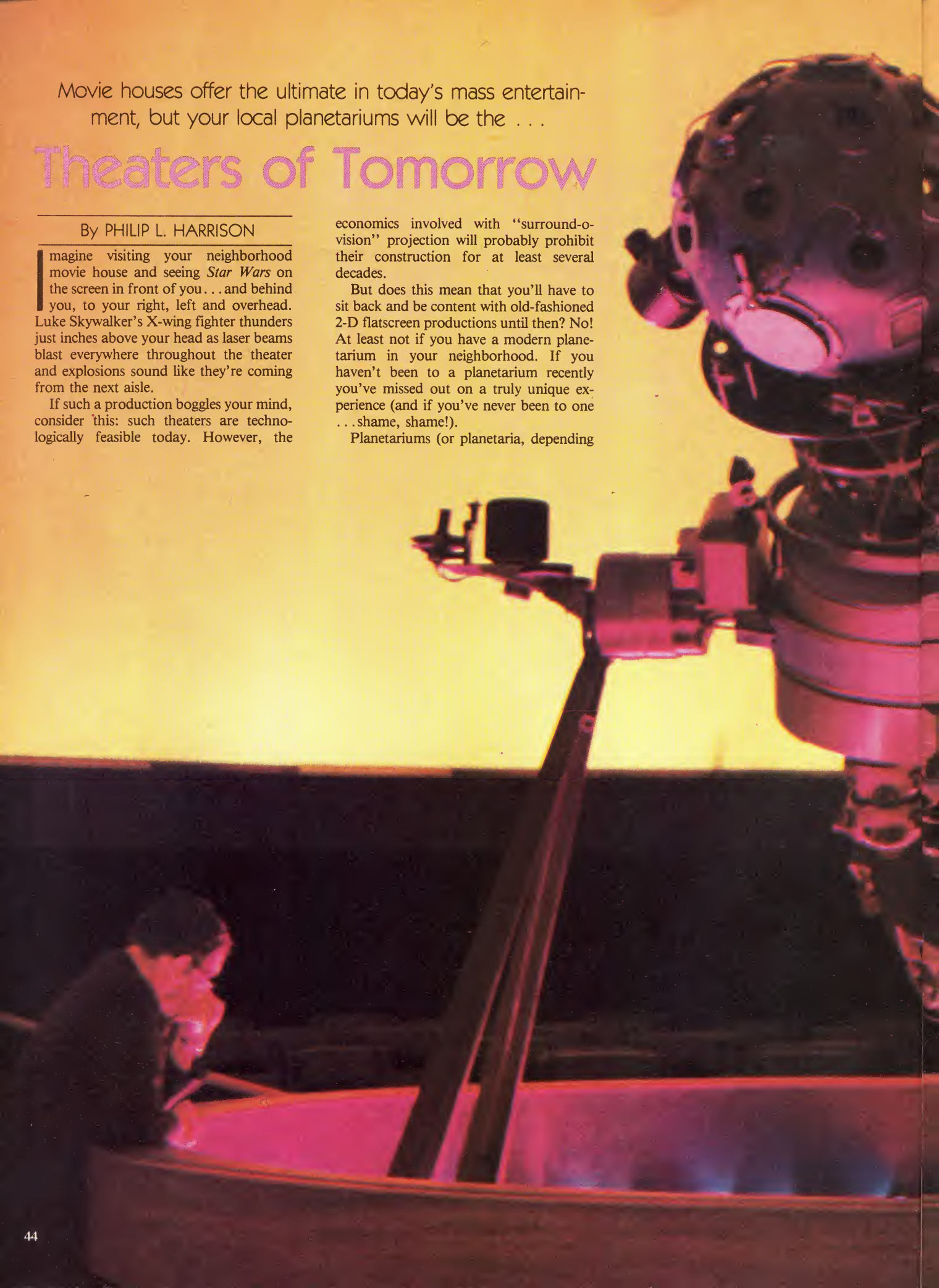
Imagine visiting your neighborhood movie house and seeing *Star Wars* on the screen in front of you . . . and behind you, to your right, left and overhead. Luke Skywalker's X-wing fighter thunders just inches above your head as laser beams blast everywhere throughout the theater and explosions sound like they're coming from the next aisle.

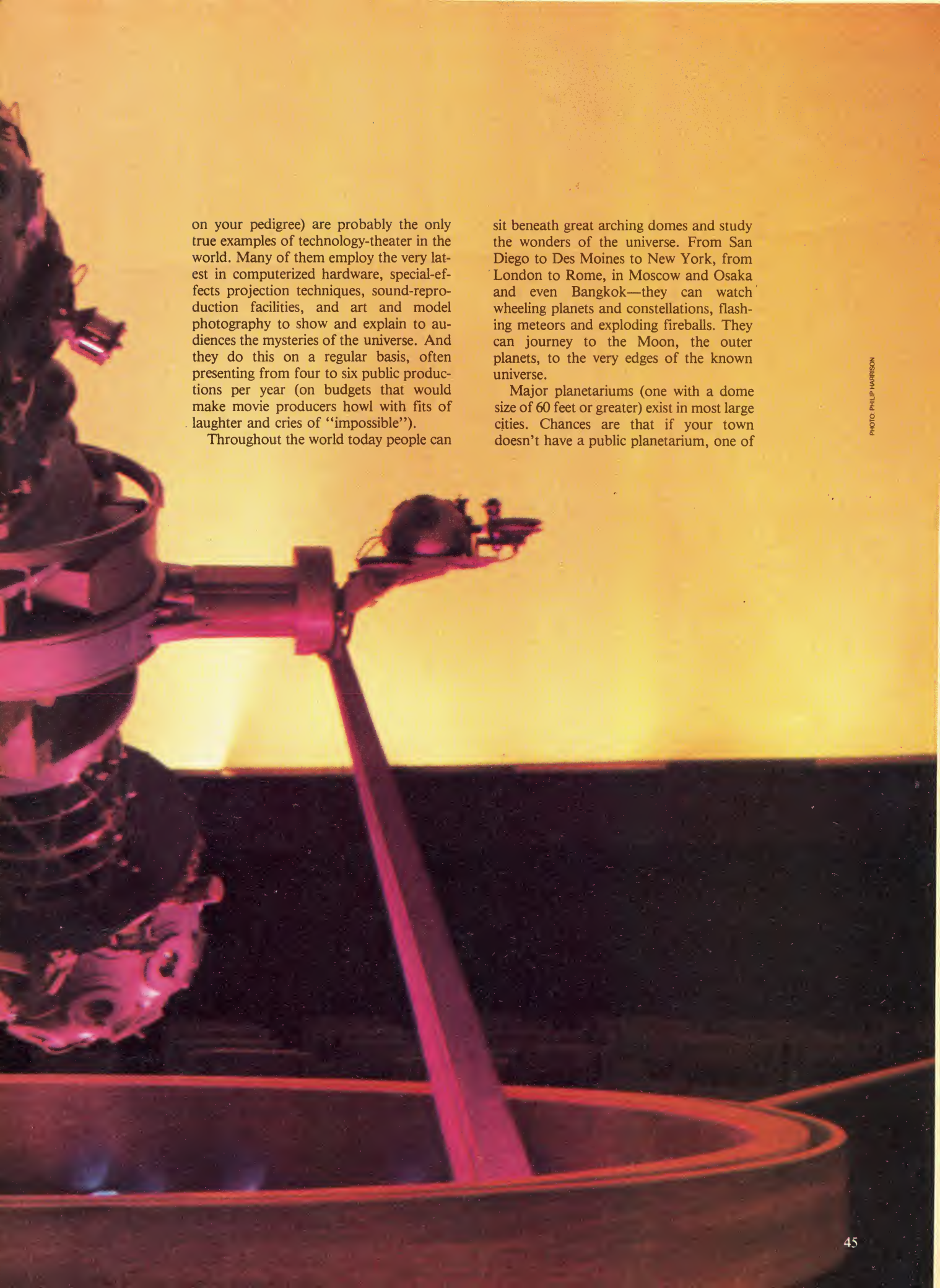
If such a production boggles your mind, consider this: such theaters are technologically feasible today. However, the

economics involved with "surround-o-vision" projection will probably prohibit their construction for at least several decades.

But does this mean that you'll have to sit back and be content with old-fashioned 2-D flatscreen productions until then? No! At least not if you have a modern planetarium in your neighborhood. If you haven't been to a planetarium recently you've missed out on a truly unique experience (and if you've never been to one . . . shame, shame!).

Planetariums (or planetaria, depending





on your pedigree) are probably the only true examples of technology-theater in the world. Many of them employ the very latest in computerized hardware, special-effects projection techniques, sound-reproduction facilities, and art and model photography to show and explain to audiences the mysteries of the universe. And they do this on a regular basis, often presenting from four to six public productions per year (on budgets that would make movie producers howl with fits of laughter and cries of "impossible").

Throughout the world today people can

sit beneath great arching domes and study the wonders of the universe. From San Diego to Des Moines to New York, from London to Rome, in Moscow and Osaka and even Bangkok—they can watch wheeling planets and constellations, flashing meteors and exploding fireballs. They can journey to the Moon, the outer planets, to the very edges of the known universe.

Major planetariums (one with a dome size of 60 feet or greater) exist in most large cities. Chances are that if your town doesn't have a public planetarium, one of

PHOTO: PHILIP HARRISON



PHOTOS: GATES PLANETARIUM

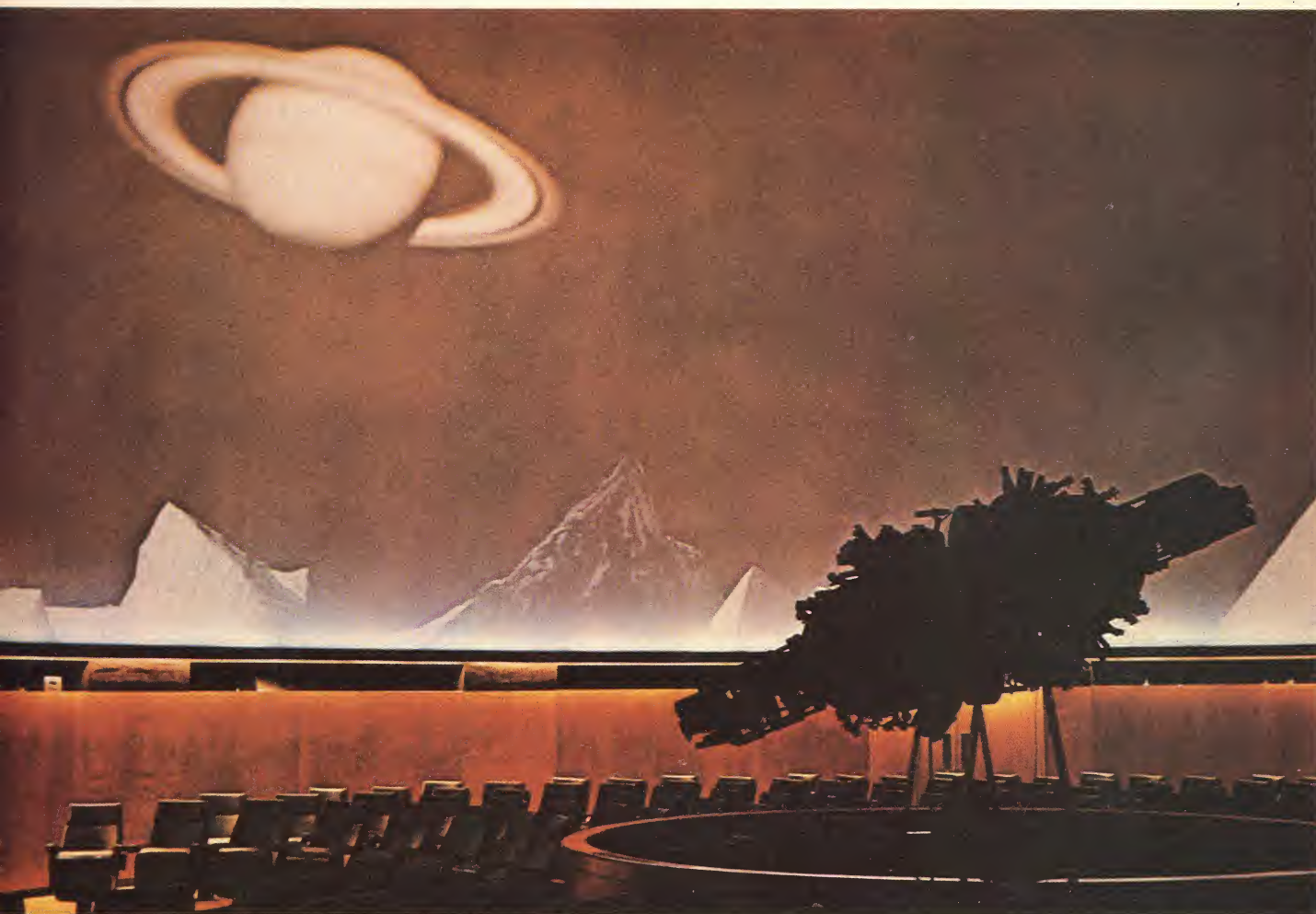


PHOTO: VANDERBILT PLANETARIUM

Planetarium special effects can approach feature-film quality on budgets that would make movie directors moan. Above, two rear-projection composites from the Gates Planetarium in Denver, made by Universe Fabrications Coordinator Kevin Atkins and staff photographer mark Read. At left, the Enzmann Starship nears a binary star system. At right, two Prometheus-

type starships begin their journey from Earth to Beta Lyra. Above, a Titan moonscape dominates the dome inside the Vanderbilt Planetarium on Long Island, N.Y. Silhouetted at right of photo is the Vanderbilt's three-and-a-half ton Goto Viewflex Mark I projector. Preceding page: the Zeiss VI projector in its pit at the Strasenburgh Planetarium in Rochester, N.Y.

your schools does. Regardless of their size, however, they all have one thing in common—they project a likeness of the night sky on a darkened ceiling.

Origins

Planetariums are a result of the human desire to understand the universe that surrounds us. Each attempt to portray the universe, whether drawn or carved, was in its own way a planetarium.

One of the earliest models was a zodiac carved in a temple ceiling in Egypt during the first century BC. The Romans pictured the heavens as a globe, called a celestial sphere, which was held up by Atlas. These spheres, often made of bronze or marble, were decorated with carved or inlaid constellation figures. But none of them succeeded in showing the universe as it appears from Earth, and none of them even attempted to demonstrate the movements of the Sun and planets.

Interestingly, the famous Greek scientist Archimedes, credited as the founder of the principles of specific gravity and the term "Eureka!," is reputed to have built such a model during the second century BC. Unfortunately, little is known of its design except that it was water-powered and demonstrated solar, lunar and planetary motions (including eclipses).

"Armillary spheres," celestial globes with all the non-important parts cut away, have been in use since the time of Emperor Shun of China more than 2,000 years before Christ. These globes were constructed of rings that were positioned to represent the zodiac, equator and the horizon. Because they weren't solid, it was possible to imagine that you were inside, looking out at the stars and planets.

Many of these armillaries were incredible works of engineering and artistic construction. One of the most elaborate, the Gottorp sphere, built in 1657, had the Sun as a brass ball and the six known planets as silver angels mounted on rings showing their orbits. On the outer rings, constellation figures were wrought in bronze with the brighter stars mounted in silver. Most amazing was the ring representing the equator, which turned at a rate corresponding to that of the actual Earth.

In 1660 another Gottorp sphere was built in Germany and this one came closer to our modern concept of the domed theatre. Driven by water power, this fantastic construction was a huge hollow ball, 11 feet in diameter, that turned on its axis once every 24 hours. It weighed three-and-a-half tons and had room for 12 people to sit inside.

In the 1700s an unusual planetarium was made for the Earl of Orrery. Called an "orrery" in his honor, it showed the solar system as depicted by Copernicus—from an extraterrestrial viewpoint, with a stationary Sun and a round Earth rotating on its axis as it moves about the Sun once a year. One of the largest orreries in the United States, by the way, is located on the

first floor of the Hayden Planetarium in New York City. Built into the ceiling, this electro-mechanical marvel is 40 feet across.

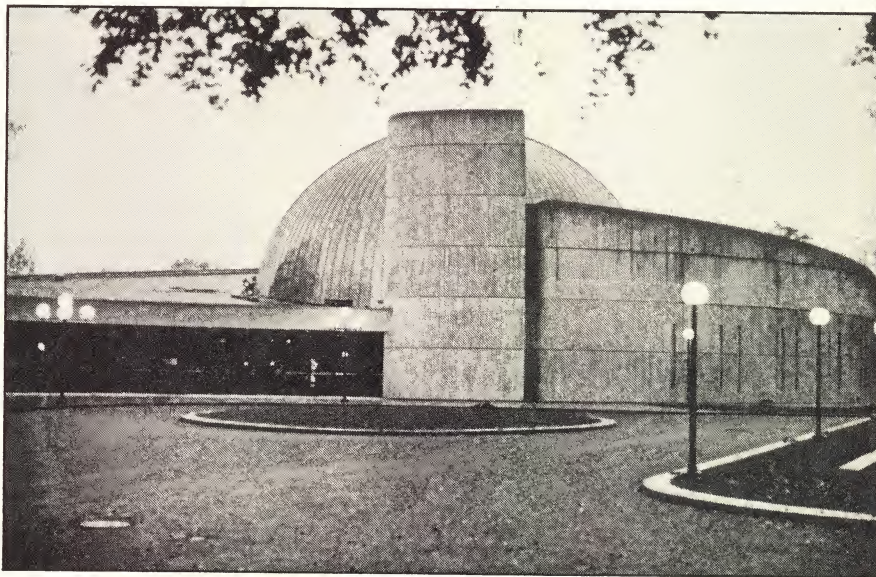
In the middle of the 18th century, English astronomy professor Roger Long constructed his "astronomical machine," a globe 18 feet in diameter that held 30 people. The globe shell was pierced with different-sized holes to simulate stellar magnitude and the Sun was represented by a larger light that was made to move.

A similar globe was designed by Dr. Wallace Atwood in 1911. However, this one was electrically driven and accurately depicted the motions of both the Sun and the Moon.

Then, shortly before World War I, the

globe-shaped projector in half. The idea was to simulate the stars of the northern hemisphere in one part and the southern hemisphere in the other. Motors enabled the projector to move on another axis and, for the first time, the stars could be seen as they appeared from any place on Earth and at any time of the year.

Twenty-five of these Zeiss projectors were constructed before the Second World War, five of them in the United States. The forerunners of all modern-day planetariums, these instruments cost well over \$200,000 (in the days when inflation was something you did to an automobile tire) and reached amazing degrees of perfection.



The Strasenburgh Planetarium in Rochester, N.Y. One of the innovators in the field, the Strasenburgh initiated inter-planetarium cooperation. The large dome is the star theater, while the large central column houses a public observatory.

famous Zeiss Works in Germany proposed to build a giant globe with electric bulbs for stars and with the planets, Moon and Sun as lighted disks driven mechanically on its interior. However, the war interrupted these plans, which were eventually discarded as impractical.

After the war, though, Dr. Walter Bauersfeld (now revered as the "father of the modern planetarium") of the Zeiss Company had an idea that would revolutionize planetariums. In his concept, the moving globe would be fixed and its inner surface painted white to act as a projection surface for many small projectors. These projectors would be placed in the center of the room and interconnected with gears and motors so as to simulate the movements of heavenly bodies as they appear to the unaided eye.

The first of these new planetariums was completed in Germany in 1925. It had one main projector which was capable of showing the stars from only one latitude, along with the movements of the planets and the Sun and Moon.

Further improvements were made in the second model, which split the original

Since then, other planetarium projectors, based largely on the Zeiss, have been constructed by Spitz, Korkosz, Peerless and the Japanese Goto-Viewlex and Minolta. Most of these instruments were custom-made and, consequently, horrendously expensive. (In fact, a modern automated Zeiss instrument can run to the tune of \$1.5 million!)

However, Armand N. Spitz had a dream of creating a planetarium projector that anyone might own. In the 1940s he carefully drilled holes of the proper sizes in a tin can and placed it over an electric bulb. The idea worked so well that he began demonstrating the instrument in schools. Then, in 1947 he formed a company, now known as Spitz Space Systems, to produce an inexpensive commercial planetarium. Spitz became to planetariums what Ford was to the automobile industry. Today, most school and small museum planetariums house a Spitz projector.

Beyond the Dome

The next big evolutionary step was one of philosophy. Until the late 60s, planetarium shows were mostly scholarly

affairs—generally live lectures by astronomers, teachers or museum curators, supplemented (maybe) by two or three pieces of recorded music (either on someone's home tape recorder or a phonograph record), a slide projector and one or two special effects, projected by specially designed individual units. But there existed what George Lovi of *Sky and Telescope* magazine once referred to as an "Iron Curtain" separating ideas and cooperation.

It should be understood that each planetarium is like an individual film, distribution and theater company. With

of 2001, but using the great dome to hurtle projections all around the audience. Programs were entirely prerecorded, blending professional voices, music and sound effects into a smooth running commentary. Projections were often so numerous and so closely timed (remember that a planetarium show is a multi-media production) that a computer was installed to handle the situation. And (heresy!) the great Zeiss instrument was placed on an elevator so that it could be lowered out of the audience's way when celestial accuracy was not required.

Most important of all, the Strassenburgh

corporating up to 12 precisely located slide projectors in special coves around the base of the dome. Each slide may be photographed from intricately drawn artwork (in 12 sections so that no seams show) or from specially constructed models.

The smoke rising from the bubbling volcanoes is produced by separate projectors. There are a number of ways to accomplish the effect and, in true Rube Goldberg fashion, planetarium technicians have utilized everything from slowly rotating wheels cut into the focusing plane of carefully positioned single slide projectors, to rotating transparent cylinders covered with Duco cement and masked with black electrician's tape. Lava flocs can be created the same way, only with the wheels (or cylinders) rotating in the opposite direction and colored red. Some planetariums have achieved this effect by using motion pictures of actual flocs, then carefully editing and masking the film to conform to the images on the panorama. Moving dinosaurs are created by animating models or artwork against a black background, and separately projecting them on the desired area of the dome. Then all of this equipment is tied into a single circuit so the operator can bring it all up as a single captivating projection.

Let's look at another "simple" effect. You're in deep space, approaching the planet Jupiter. The multi-colored bands of Jupiter's atmosphere move slowly across its face as the planet grows larger and larger, filling almost a quarter of the dome before it appears to drop out of sight below. The whole effect lasts maybe 20 seconds (while Holst's Jupiter music is probably playing).

If this effect were in a motion picture it could be achieved by a single motion of a camera on a track as it photographed a moving model. In the planetarium it's a whole other ballgame.

An oblate circle (either a slide or a cut-out) is placed in its usual position in a slide projector. A transparent, motorized disk painted with vari-colored circular bands of transparent paint, is also placed into the focusing plane of the projector. With the motor running at a slow speed and the projector lens just slightly out of focus, the resultant image is a reasonably good interpretation of a rotating Jupiter. By replacing the normal projector lens with a motorized zoom lens from a camera, the planet can be made to grow quite large, giving the effect of movement toward it. Then, by placing a motorized mirror in front of the zoom lens, this enlarging image can be made to shift positions on the dome. If you happen to have three or four arms and hands, you might just be able to control the whole thing!

Not all effects are that complicated—or that expensive—but a good knowledge of optics, gear trains, micro-switches and, perhaps, solid-state circuitry, is a plus when creating these otherworldly effects.

Motion-picture projection, some of it



One of the latest all-sky planetariums is the Flandrau at the University of Arizona in Tucson. The Flandrau has incorporated an epiconcentric seating arrangement and a stage for live performances and informative lectures.

very few exceptions, each facility is unique. While the projectors may be similar, the seating arrangement may differ, the projection coves may call for different projection angles, the auxiliary projectors may encompass different areas of the dome, the power sources may be different. . . on and on, ad infinitum. It's as if each movie theater in the country used a different size film—nobody could show a film in one theater and then play it in another without extensive and expensive modifications. As such, each planetarium writes its own shows, designs its own special-effects equipment, does its own artwork and photography, handles its own soundwork. . . . Get the picture?

In 1968, two important events occurred almost simultaneously. First the motion picture 2001: *A Space Odyssey* premiered and blew the minds of planetarium special-effects technicians everywhere.

Then the Strassenburgh Planetarium opened in Rochester, N.Y. Endowed with the understanding that it was to be an innovative institution, the Strassenburgh started breaking every rule in the book. They created and used *hundreds* of special-effects projections in their public shows, springboarding off the visual ideas

invited every planetarium operator to a nationwide conference and shared their techniques—an almost unheard-of idea at that time. The Strassenburgh's "pop" approach became the model for today's planetariums.

The modern planetarium is the most technologically advanced and the most dramatic of theaters. Its stage is the whole of creation and its principal actors are the celestial subjects of space and time. So what's on the drawing boards for the near future. . . ?

The Modern Approach

Special effects are usually the most dramatic part of any modern planetarium show and, just as in science-fiction movies, there are aficionados for whom these projections are "it." A single special effect in such a show may require 12 or more separate projectors. Panoramas are a good example: Sitting quietly in your seat, you are suddenly thrust back into prehistoric times. All around you are smoldering volcanoes, lava flocs and, perhaps, an occasional dinosaur lifting his head out of the water.

A major planetarium utilizes a 360-degree panorama system, usually in-

quite sophisticated, has been making inroads into planetarium productions for the last decade. Some productions may utilize a dozen Super 8 or 16-mm projectors, firing simultaneously. Others may incorporate one, for example, in recreating a lunar walk. The lunar panorama and landing module are relatively simple slide projections. The actual moving astronauts are a motion picture of actors, photographed on a totally blacked-out set. But when projected with the panorama, miniature astronauts appear to be cavorting around the dome.

A few facilities have experimented with elaborate "all-sky" or fisheye projection systems. Probably the original idea for fisheye movies in a planetarium goes back to the New York World's Fair of 1964-65 and the spectacular "To the Moon and Beyond" film in the 100-foot dome of the Transportation and Travel pavilion. Some of the effects in this stunning film (created, in part, by Douglas Trumbull, who would later exhibit his mastery in such films as 2001, *Silent Running* and *Close Encounters*) were virtually three-dimensional.

One of the first planetariums to go all-sky was the University of Nevada's Atmospherium. This facility has a Spitz projector placed on tracks and an elevator so that it may be moved out of the way of a specially designed 160-degree, wide-angle movie projector. With the projector installed at floor level, the 160-degree image actually encompasses the entire 180 degrees of the dome. Time-lapse photography of daily cloud formations gives the visitor a breathless thrill when projected all around, and thunderstorms are about as realistic as one can hope for without actually installing shower heads (and don't think that something along that line hasn't been attempted!).

Though future uses for such all-sky projection could, conceivably, place us inside a single cell or down a canyon river run or into the workings of an atom, animation expenses are usually prohibitive.

New seating arrangements for planetariums got their biggest push with the opening of the Vanderbilt Planetarium on Long Island, N.Y. Mark Levine, planetarium director, explains his trend-setting "epiconcentric" arrangement as a desire to have the best of all worlds. The seats are still arranged in a circular fashion but with the central pivot point located halfway between the center of the theater and the southern wall. The resultant empty circular space affords a small area for guest lecturers or a place for small groups to sit in an intimate fashion.

The Vanderbilt's star projector, by the way, is unique to the industry. All major projectors, such as the Zeiss, are designed to show the approximately 8,900 stars to magnitude 6.5 that are visible to the human eye under ideal viewing conditions throughout the year. The Vanderbilt's massive Goto-Viewlex Mark 1 actually projects an incredible 11,369 stars down to

a magnitude of 6.75, which is beyond normal human sight! The thought behind this apparent extravagance has to do with human perception and psychology. Its designers felt that the human being "senses" a greater number of stars in the real sky than can actually be seen. In order to obtain that kind of realism they designed the projector to show 2,469 additional stars that no one without binoculars could see. It works! The Vanderbilt Planetarium sky is one of the most beautiful and stunning artificial skies in the world. Oh yes, many visitors *do* bring binoculars.

Along with the optical advances, sound systems of many planetariums are beginning to gladden the hearts and ears of audiophiles. Gone are the days when scratchy mono hi-fi would shriek through a single speaker located at the apex of the dome. Today's planetariums are all equipped with stereo as a matter of course. But most modern facilities go beyond stereo. The Fiske Planetarium at the University of Colorado in Boulder offers a good example. An automated tone-encoding system for special-effects controls, as well as four-channel sound, are recorded on an eight-track Ampex with one-inch tape. The sound tracks feed the main-channel theater amplifiers and speakers as well as a combining amplifier and low-pass filter. The combining amplifier drives a derived zenith channel while the filter feeds a "sub-woofer" for frequencies below 23 hertz (actually as low as 17), which is the lower limit of the main-channel speakers.

All of the speaker enclosures were computer designed. Sound response curves were run for 72,000 variations. The final enclosures are 29 cubic feet each and contain two 15-inch drivers. Their frequency

response is virtually flat down to 23 hertz and they are about 80 percent efficient (versus only 8 percent for most home-type speakers). At a maximum average level of only *two* watts per channel, the loudness approaches safety limits in the theater and the 60-watt amplifiers still have adequate "headroom" for peaks.

The Flandrau Planetarium in Tucson and several Canadian planetariums have gone over to omniphonic sound, where sound seems to emanate from any and every direction through the use of as many as 33 speakers!

With literally hundreds of projectors and complex sound systems to be synchronized for a single performance, it is no wonder that, short of a human clone with a dozen arms and hands, planetarium operators have gone over to computerized control systems. The Strassenburgh Planetarium in Rochester, the first to be fully automated, utilizes a Digital PDP-8, one of the more advanced small computers available on the market at the time of the planetarium's opening. The computer sends an electronic pulse several times a second through every switch and potentiometer on the Strassenburgh control console. As humans move the controls in real-time, the computer notes the new positions with time references and records it on tape for later replay. If the operators make a mistake, they can rewind the tape and re-record that particular portion. In effect, it turns the entire planetarium into a giant tape recorder! When the humans are satisfied, they simply punch up the playback mode, grab a Coke and sit down and watch the planetarium do its own perfor-

(continued on page 64)



Chicago's Adler Planetarium, the first in the western hemisphere, has hosted more than 25 million visitors. In the foreground is a statue of Nicholas Copernicus, Polish astronomer. Inscription reads: "By reforming astronomy, he initiated modern science."

Future Forum is designed to expose our readers to the thoughts of a variety of experts in the fields of science fact and science fiction. Each issue will pose a new question to our "guest panel" on a particular aspect of SF, space-age technology or future trends.

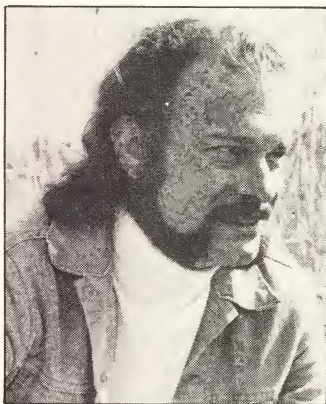
Do you see a continuation of traditional sex roles during the next fifty years?



JOANNA RUSS

Author of *Picnic On Paradise*, *The Two of Them* and *And Chaos Died*.

As Asimov has said somewhere (I think in your magazine) a continuation of traditional sex roles is impossible. In fact, *it has already stopped* and feminism, far from being anything "new," is merely trying to catch up with the Industrial Revolution.

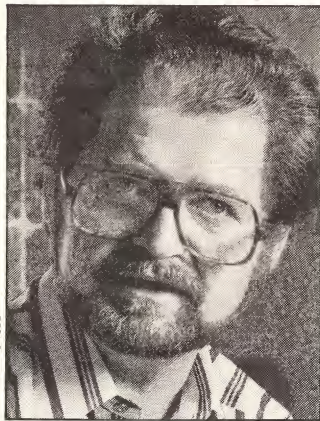


JOE HALDEMAN

Hugo and Nebula award-winning author of *The Forever War*, *Mindbridge*, *All My Sins Remembered* and *Infinite Dreams*.

I think women will still bear the children and men will still be able to write their names in the

snow. Other than that, it's hard to say. Over the next couple of decades, I think it's safe to predict that American women will remain polarized over the issue of absolute equality with men, though formal political equality will be achieved. In the long run, the scales might tip either way—perhaps through the effect of a truly charismatic leader—and the most conspicuous consequence would probably be family structure: either a return to traditionally close ties among large families or increased fragmentation of structure and dilution of mutual responsibility.



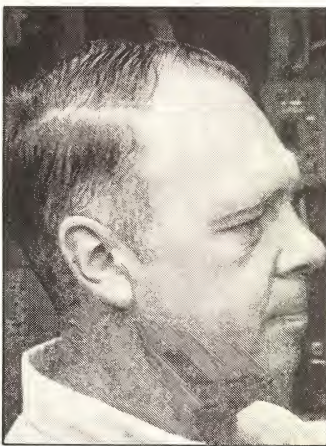
LARRY NIVEN

One of the top names in science fiction, his latest works include the award-winning *Ringworld*, *A World Out of Time*, *The Magic Goes Away* and *Lucifer's Hammer* (with Jerry Pournelle).

Some people will stick to monogamy and the usual family structure. Some always do. Others will take advantage of the sudden vast range of choices, and that will be true for the next fifty years. Beyond that... isn't it obvious that giving Gay Lib what they want is an effective way to breed homosexuals out of the human race? At some point they will be a tiny minority, and people

inclined to use birth control methods will be another. Give it 200 years.

Then what? Monogamy is great for lazy people (my wife and I are monogamous); but the people who seemed to have had the most fun as children, and who have the most success as adults, are members of large families. We can't go back to having ten children per couple; there's not enough room on Earth. So, instead of decreasing the number of children, let's increase the number of parents. One family: the 10 parents, five pairs who make love together, if you really like monogamy; or not, if you don't.



HAL CLEMENT

The pen name of Harry C. Stubbs, the author of *Iceworld*, *Mission of Gravity*, *Cycle of Fire*, *Needle and Through The Eye of the Needle*.


Basic sex roles will continue, with some modification, unless our technological advances permit ectogenesis. As in the past, members of both sexes will reject traditional roles for homosexuality or other non-self-perpetuating life styles, but these will necessarily be side branches which can only maintain their ex-

istence by drawing from the more traditional family arrangement. This opinion could be nullified by society going to an extreme socialistic life style like that of Edgar Rice Burroughs' green Martians, but personally I hope not. I prefer individual citizen responsibility and doing one's own thing.



MARION ZIMMER BRADLEY

SF author and originator of the *Darkover* series. Some of her most recent books include *The Spell Sword*, *The Shattered Chain*, *The Heritage of Hastur* and *Stormqueen*.

Yes, I think traditional sex roles will continue. We are already seeing the stupid backlash against the women's movement, and my daughter's generation will probably lead the tail-between-the-legs movement back to kinder, kirche und kuche. I hope I don't live to see it. Fortunately we will never go *quite* all the way back because there is no way to unprint the books that have been published. But the resurgence of curls, lipstick and long skirts make me feel that women probably don't *deserve* equal rights. We spent hundreds of years getting *out* of the damn things... and here the girls are, chaining themselves up again. 

007 In Orbit

James Bond joins the race for space in "Moonraker," piloting a NASA space shuttle in pursuit of out-of-this-world evil.

By RICHARD MEYERS

The American space program suffered an incredible setback in 1962. Through remote-control sabotage, NASA's rockets were being dashed from their gantries even before lift-off. Although the combined might of many nations was not able to locate the source of the menace, one lone British government agent managed to quash the insane plans of the obsessed scientist-villain, *Dr. No*.

Five years later, Apollo manned space flights started disappearing from orbit. All the military and intelligence communities of the world were able to come up with was



Roger Moore returns as 007.

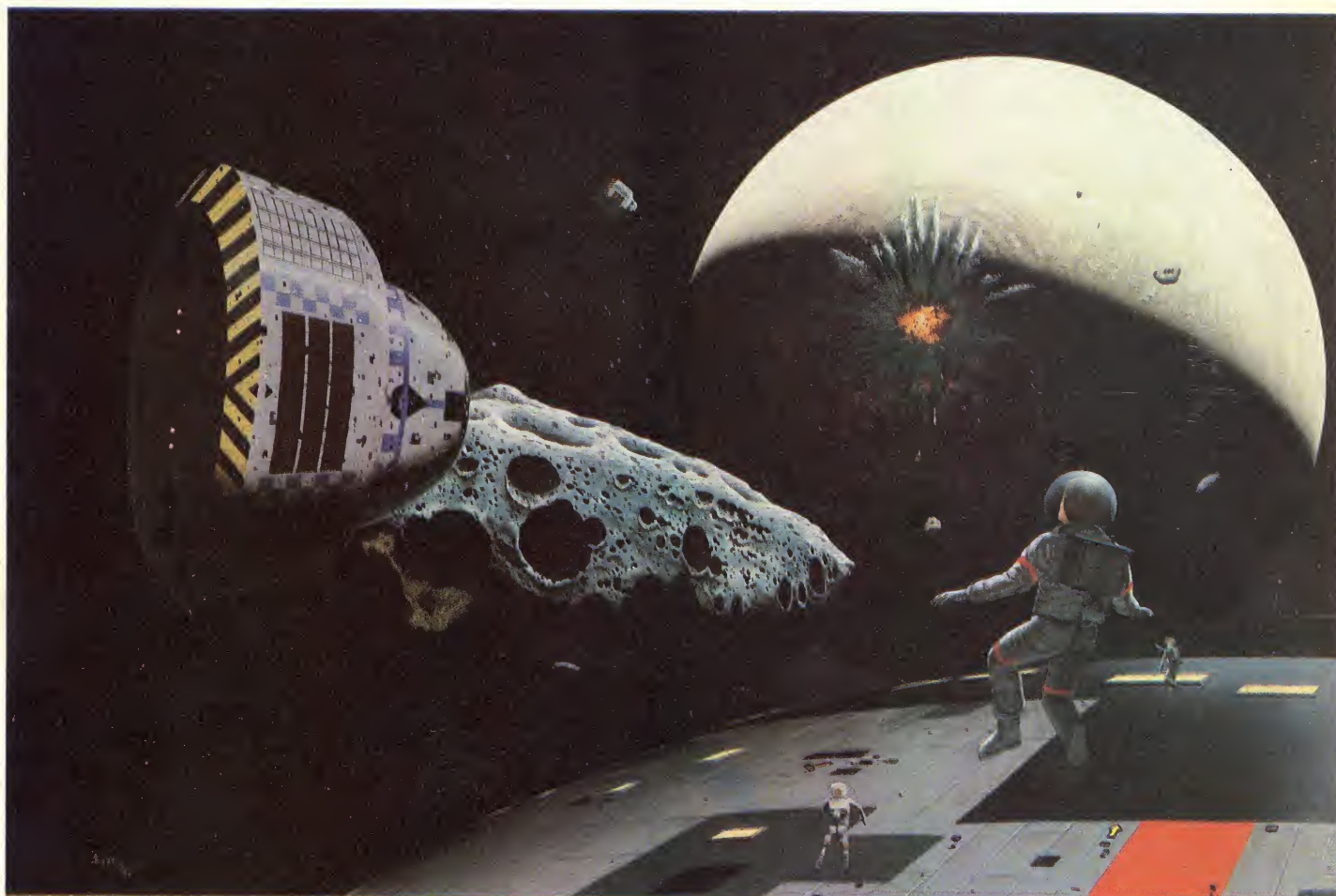
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that the terrorist organization responsible was headquartered somewhere in Japan. Once again, that lone British operative managed to do the impossible, smashing the SPECTRE organization and rescuing five captive astronauts from certain death, thus proving that, in their case, *You Only Live Twice*.

It's been more than 10 years since the internationally famous secret agent, James Bond (007—with a license to kill), last saw space. This summer, however, he will once again take to the skies in the most expensive, the most spectacular, the most thrilling Bondian adventure yet... *Moonraker*. Like its two science-fiction oriented predecessors, *Moonraker* is a totally fictitious excursion into government espionage that has one firm foot planted in the realities of today. In fact, the producers of *Moonraker*



A gigantic *Moonraker* set featuring a space shuttle, constructed on a French location.



In Earth's Image: The Terraforming of Other Planets

When NASA's two far-ranging Voyager spacecraft, on March 5 and July 9 of this year, approach the giant gas planet Jupiter for close-up probing into its secret life, their revelations will add exciting and important new information to our storehouse of knowledge about the outer planets. They represent the next step in the United States' program of systematic planetary exploration in which the solar system is used as a natural laboratory—an increasingly familiar environment crisscrossed by Mariners, Vikings, Pioneers, Voyagers and other space probes.

Ours is truly a new Age of Discovery. But what would be the greatest discovery, the crowning achievement of space exploration, remains elusive: the discovery of life on other worlds. As more and more reports are coming in from our extremely busy and

obedient robot explorers out there in the void, one fact is emerging with disappointing consistency: Earth seems to be the only place in the solar system carrying life.

Moreover, except for Earth, the planets of the Sun are inhospitable to humans and too hostile to maintain nearly all forms of terrestrial life.

Some are too hot: Mercury and Venus, for example. Mercury's desolate, heavily cratered surface, resembling that of our Moon, supports a trace of an atmosphere composed chiefly of argon, neon and helium, at a trillionth the density of Earth's atmosphere, but its temperatures range from 510°C (950°F) on the sunlit side to -210°C (-350°F) on the dark side. The planet is literally baked by day and frozen by night, and life is out of the question.

Venus has a thick carbon-dioxide atmo-

sphere which acts as a deadly one-way valve for incoming sunlight, letting it heat up the surface to 450°C (900°F), but trapping outgoing infrared (heat) radiation in a "runaway greenhouse effect." Its total lack of water, the high surface air pressure (100 times Earth's) and the atmospheric content of corrosive sulfuric acid do not permit terrestrial life.

Neither does Mars, whose environment is closest to that of Earth. Its air pressure at best is only one percent of Earth's, rarified enough to boil your blood instantly. It lacks atmospheric oxygen, and there is insufficient ozone in the air to shield out the lethal ultraviolet radiation from the Sun. On these planets, humans and higher terrestrial organisms could not survive without elaborate pressure vessels and cumbersome spacesuits to provide a submarine-like ex-

Above: the first step toward terraforming Venus may be to land "iceteroids" on the surface of the planet in an anti-spin direction—to slow the spin of Venus while adding water at the same time. This asteroid is about 10 miles across. It would take so long for asteroids to be brought in from the neighborhood of Saturn, that small cities may grow there during the trip.

istence in environmental enclosures.

Not at all happy with these prospects, imaginative people have long been looking for alternatives. With the emerging picture of an essentially inhospitable solar system, concerned scientists are asking: "Can we ever think of living out there — free and comfortable under open skies?" "Yes," some allow cautiously. By ecosynthesis. Or, to use a term long familiar to science-fiction aficionados, by terraforming.

As a youngster, I was endlessly fascinated reading in science fiction about "Planet Engineering," speculations about adapting inhospitable worlds for human colonists, synthesizing entire environments, ecologies and biospheres to fit our comforts.

Mighty "planetary engineers" roamed the galaxy, apparently for the first time, in Jack Williamson's stories dealing with the taming of anti-matter (1942), published in *Seetee Ship* and *Seetee Shock*. It was Jack Williamson, that highly seminal and strangely prophetic "classic" of the genre, who in those stories coined the word "terraforming." As early as 1933, he had already written about mining the asteroids (*Salvage in Space*), an idea which the fertile mind of visionary Dandridge Cole developed further in 1965 (*Beyond Tomorrow: The Next 50 Years in Space*). Olaf Stapledon, in the super-classic *Last and First Men* (1930), described how human colonists on Venus depleted the (fictitious) oceans of that planet by generating oxygen through electrolysis and, in the process, deliberately killing off an intelligent race of beings living in those waters. The adaptation of Ganymede was the theme of Robert A. Heinlein's *Farmer in the Sky* (1950), and Mars was the scene for Arthur C. Clarke's *The Sands of Mars* (1957). Poul Anderson's heroes changed Jupiter's largest moon in *The Snows of Ganymede* (1955) and terraformed Venus in *The Big Rain* (1955). More recently, Greg Benford's planetary engineers tackled the *Jupiter Project* (1972), and George O. Smith, in *Speculation* (1976) had Earth soil transported to Mars. On an even larger scale, Smith wrote in *The Planet Mender* (1952) about icebergs from Uranus that were transferred through space to Mars, to be turned into rain, and Robert Heinlein, not one to be outdone, moved entire planets around in *Between Planets* (1951).

On Earth, as attested by the U.S.

Jesco von Puttkamer is Program manager of Space industrialization and Integrated Long Range Planning Studies at NASA. He is also the technical advisor for Paramount's forthcoming Star Trek movie.

Weather Modification Advisory Board and the MIT Sea Grant Project Office, planet engineering is already almost a fact of life. But what about the other planets? As usual in comparing science fiction to science fact, the realities are somewhat sobering and tend to subdue overly enthusiastic expectations. What we have found out so far about the actual surface conditions on the other members of the solar system has led to some major revisions in the earlier speculative scenarios of terraforming planetary environments.

The Moon is closest to us, but its lack of atmosphere and low gravity require artificial enclosures either on or under the surface. The necessary oxygen could be produced from the oxide-rich lunar soil, eventually even as a natural by-product from the processing of other raw materials. A recent NASA study has shown that a materials-processing plant on the Moon, weighing 3,500 tons and running on 450 kw power, could yield it own mass in oxygen, silicon and structural metals in less than six days of operation.

Due to its position in the solar system and the postulated nature of its atmosphere, prior to 1973, Venus was long thought to be the planet best suited for terraforming. Carl Sagan, in 1961, suggested cautiously in the journal *Science* that Venusian clouds could be seeded with hardy anaerobic microorganisms which do not need oxygen for living and use photosynthesis to split carbon dioxide (CO₂) into oxygen and carbon. Because of the geometric rate of growth of the replicating organisms — blue-green algae, the direct ancestors of all life on Earth — the process would be amplified and lead to an environment more pleasant for human beings in a few hundred or thousand years: an oxygen-bearing atmosphere of reduced pressure and diminished greenhouse effect, allowing temperatures to decrease and moisture to collect on the surface in due time.


Since then, it was discovered that the amounts of water vapor in the Venus atmosphere are minimal, perhaps no more than a layer one foot deep on the surface, if completely precipitated into the liquid state through condensation. More seriously, with 84 percent of the Venus clouds consisting of sulfuric acid, it would appear that our blue-green CO₂ eaters would have to be extremely hardy organisms, indeed, to survive and, what's more, to reproduce happily. But with current developments in genetic engineering, it is not impossible that future bio-engineers could transform common blue-green algae, through gene manipulation, into the super organisms best equipped for photosynthesis in the Venus at-

mosphere.

Mars, too, has been studied by scientists intent on finding plausible mechanisms for terraforming. The discovery of water on Mars by the Viking probes, locked as ice in the north polar cap, has given credibility to earlier speculations about the presence of water at the poles and under the surface as permafrost. As a result, the question, "Can the Martian climate be modified to be more conducive to the growth of terrestrial organisms?" is now being answered with a tentative and qualified, "Yes."

In 1973, Carl Sagan, O.B. Toon and Peter Gierasch looked at mechanisms of terraforming by which the Sun's radiation absorbed by the polar cap could be increased by 20 percent — a value sufficient to lead to an Earth-like one-bar atmosphere and a significantly warmer climate if maintained for about 100 years. Besides shifting the entire planet around (a feat easy only for science-fiction writers), they recommended a deliberate darkening of the high reflectance surface of the polar cap (i.e., lowering the "albedo" from 77 percent to 73 percent). Using fine sand, dust or carbon black, sprinkled on the ice cap, and assuming a layer one millimeter thick, maintained for 100 years despite strong Martian winds, Sagan would require up to 10 billion tons of material shipped through space during the course of a century — no mean feat either.

A more recent study by NASA, published in 1976*, found "no fundamental, insuperable limitation" to the ability of Mars to support terrestrial life. With a combination of genetically engineered blue-green Mars algae for photosynthesis of oxygen (lichens turned out to be too slow in growing) and climate modification through increased evaporation of the polar water-ice cap by albedo-reducing darkening agents, humankind could, in the course of several tens of thousands of years, produce a breathable atmosphere and a comfortable climate on Mars, complete with protective ozone shield.

Shades of Stapledon's murderous Venus colonists? The ethics of terraforming has been dogging scientists' speculations since the early days. Altering planetary environments through ecosynthesis must be rejected unreservedly as long as there is the slightest chance that the planet harbors indigenous organisms that could be extinguished. Only when we have scrupulous assurance that no other life forms would be disrupted by the alteration can we call in the planetary engineers. 

*"On the Habitability of Mars," NASA SP-414. Order from National Technical Information Service, Springfield, VA 22161 (Price \$5.25). An excellent report which I recommend to all interested in Martian ecosynthesis.

about the audience. I write for the most literate audience in the world. I write for an audience that is knowledgeable, that has a sense of history, that cares about ethical questions, that is strong and courageous. I write for an audience of one. I write for myself. Absolutely. I think any writer who writes any other way is a fool. If I were to pay attention to what I would presume to be the needs of my audience, I'd fall flat on my face. After all, who the hell is my audience? The best I can do is hope to please myself. If I please myself, then I'll usually please the rest of my readership. But even if I don't that's okay, because I've pleased me.

I perceive, however, in a very schizoid way, that my work does have impact on people. There are people who are motivated, or affected, or changed by what I write. On the other hand, I must stop and say to myself, "Don't oversell yourself, moron!" Really, all I am is a paid liar. I get paid very well to tell these funny little dreams I have. If I suddenly start aggrandizing what I do, and start saying, "I'm a shaker, I'm a mover, I'm a force for good in my time," then I'd become an even worse pompous turkey than I am to begin with.

Actually, very few books have altered the course of history, even in a slight way. Perhaps books such as *Uncle Tom's Cabin* have, maybe Aesop's *Fables* have, but not too many others. Most books don't have any impact at all. So while I write to have an impact, it's an impact that's inherent in the work. It's in the integrity of the story, in the material. If I've done it right, then it will strike a chord. However, I don't know what my work is intended to do. I do know, though, that people read my stuff and say, "Man, you gave me a pain in the stomach," or "Oh God, I didn't sleep last night," or "I hate you a lot," or "You unsettle me." I prefer that. I don't want anybody to ever say of my work, "Gee, that was a nice, quiet little story." Some people make a big deal about the violence in my stories. Hell, there's less violence in my stories than many people would have you believe. A good 50 to 60 percent of my work has no violence in it. But people remember the violent ones.

That's because those are the stories which jangled their nerves. The story that was up for 1978's Nebula, Hugo and World Fantasy Awards—"Jeffy is Five"—has virtually no violence in it. There's some, maybe, but it's not the kind that's in "A Boy and His Dog" or "I Have No Mouth, and I Must Scream." It's a heart-rending story. But I venture to say, even as well-known as the story is now, and will be if it wins some awards, five years from now, when they're making up anthologies, they'll still be buying "I Have No Mouth" and "A

Boy and His Dog." In fact, not a week goes by that someone doesn't anthologize these two stories. And that annoys me. That pisses the hell out of me! After all, these people are all cannibalizing one another. They aren't bothering to look at the totality of the work. It's easy for them to find a story that's already appeared in a dozen places. If somebody wants to buy any one of the 900-odd stories, except, perhaps, for "Repent, Harlequin!" Said the Ticktockman," and a couple of others, they can have that story for \$100, maybe \$200.

But if they want "I Have No Mouth," or "A Boy and His Dog," they'll pay \$500, \$600, \$1000, as much as I can bleed out of them. It's my hope I can discourage people from constantly going after the same story. Really, I don't pay any attention to what the impact is, because given their druthers, the audience would have you write the same goddamn thing a hundred times. I can't let the audience dictate what I write. I have to go my own way. When I look around, I can see lots of good writers, especially in the science-fiction field, whose progress and development as artists were arrested 20 years ago by fans. I don't have to name any names. You know who I mean. They're writing essentially the same stuff today that they wrote 30 years ago. And that's tragic. It's tragic for them, it's tragic for the audience and it's tragic for all the stories that were never written.

FUTURE: In recent months, you've become embroiled in a fierce controversy over the Equal Rights Amendment. Why did you get involved in the ERA fight?

ELLISON: I'm foursquare for women's rights and the feminist movement for several reasons. It's not that I give a damn about women any more than I give a damn about men. In that sense, I'm a misanthrope. I hate males and females alike with equal vigor. But it boils down to a question of enlightened self-interest. I hate the thought that there were thousands and thousands of female equivalents of Albert Einstein and Ernest Hemingway and Babe Ruth who existed in this world and were never permitted to be that, because they had to be women, because they had to wash some moron's underwear and prepare cream of wheat for their snotty-nosed little kids. That these women were denied the right to be all they could be makes it less of a world for me.

I'm angered by all those writers I never got to read, all those scientists whose inventions would have made this a better, more comfortable world for me. I resent that. And I'm determined that that will not continue to exist. Those women are going to have that opportunity. I find it very

awkward, and impertinent, that I should be in any way at the cutting edge of the feminist movement. After all, why the hell is it my business? Women should be doing it! It's not only their responsibility, but it's their movement. I've always thought it a dubious kind of honor for someone to be a dilettante revolutionary, to be at the forefront of this movement or that movement, which happens to be fashionable at the time. But here I am. I just happen to be at the right place at the right time. It's like Lenny Bruce. Lenny became a leader. He never wanted to be. He just wanted to entertain people. And they killed him for it. But they won't kill me. I'm just too damn mean!

FUTURE: Were you surprised by the public furor over your stand on the ERA? Did you think it would provoke the kind of heated controversy it has?

ELLISON: No. I deluded myself into believing that what science-fiction fans say is what they mean. They talk about the validity of the writing, how they're the only genre that's concerned about human rights. That's bullshit! They're pimplebrains, for crissake! You wouldn't believe the asinine letters I've received. They're unbelievable! Most of the people are real morons. They have no knowledge of the issue whatsoever. That's the thing that shocks the hell out of me! They're totally ignorant of the real world. They talk a good game, but all they know is their little brand of science-fiction bullshit. Their objection wasn't that they oppose the ERA, or that they want women kept in chains, but that they didn't want the Iguanacon interfered with. They wanted to have this gag-and-vomit outing, which is no better than a goddamn Kiwanis convention. They wanted to be able to chase women, to dress up in funny gear and to run around acting like idiots.

FUTURE: As you assess your own work, have you found that writing has had a cathartic value for you? Has it taught you more about yourself?

ELLISON: Absolutely. That's one of the most valuable things about the writing. I'm able to get the best possible therapy in the world, from the best possible therapist for me, and not only not pay for it, but I get paid for it. I get paid for the privilege of answering questions about myself. I've discovered enormously complex things about myself. They've often turned out to be disturbing things, frightening things, saddening things. I've got a story in *Playboy* called, "All the Birds Come Home to Roost," which deals with my first marriage, my first wife and the fact that she's been in a mental institution for the last 15 years. I never really blocked that out; I could talk about it if I chose to, but it hurt a great deal to do so.

Very few people know about that part of my life. Now, it will appear in a story. And the story helped me deal with it. I was able to come to grips with a part of it. Another one of my stories, "Shatterday," which appeared several years ago, dealt with, among other things, my admission to myself that I really wanted my mother to die. That she was terribly ill, that the responsibility for her life had become too much for me, was something I didn't want to face. Most of me wanted her to live, but a part of me also wanted her to die. Writing about it helped me to understand my feelings better. It also taught me something important: namely, that there's terrible in all of us. We must fight to keep that terrible to a minimum. So when I yell at people, when I harangue them, it's not all of that person I'm cudgeling, but that part which is less than golden.

FUTURE: Finally, some critics have argued that your recent work has become more hopeful, more optimistic, more promising. Do you discern those changes in your work and, if so, what produced this change of heart?

ELLISON: Actually, those feelings have always been present in my work. When people say that to me, I'll usually say, "Look at 'I Have No Mouth.' That's a very positive story. It has a very upbeat ending." Really, it's an uplifting story. This man sacrifices his life, his eternity, to give others peace. He allows himself to be crucified, to spend eternity in torment, for the sake of others. That's a very positive ending. It says that the human spirit, at the final ticking moment, knowing full well that hideous reprisals will follow, still does the noble thing. There's an unquenchable spark in the human spirit that gives rise to genuine hope. Now, I was saying that as early as 1966, nearly 12 years ago. It's not so much optimism, but rather that I hope for better things. I've always hoped for better things. But I'm also a pragmatist. I know they probably won't happen. Most people, left to their own devices, will go for the cheapest, quickest out.

It takes a lot to remain strong, to remain courageous, to remain ethical, not so much because they're hard things to do, but because we're programmed day and night to do just the opposite. It comes back to the ERA thing again. When somebody says, "Look, it's hot in Arizona in the summer, and there's going to be a lot of opposition, and . . ." I say to them, "Hey moron, nobody said it was going to be easy. It's when it hurts a little, when it costs something, that it matters. If it doesn't cost you anything, then you're just blowing in the wind." Unfortunately, too many people would rather blow hot air. And that makes me sad.



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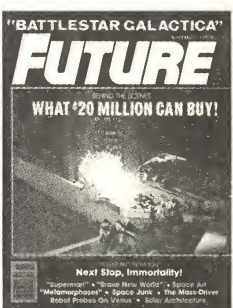
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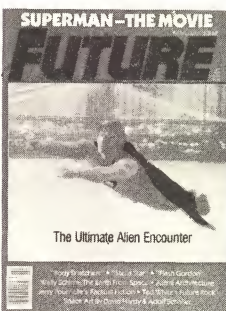
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Vincent DiFate

For SF illustrator Vincent DiFate, painting the impossible is all in a day's work.

By DAVID HUTCHISON

Artist Vincent DiFate makes no bones about it: he loves science fiction. So much so, in fact, that he has fashioned a very successful career out of illustrating covers for some of the best known SF books around. Primarily recognized as a depicter of brilliant, technology-dominated space settings, DiFate has taken the art of science-fiction illustration to a new and respectable plane. Recently, for instance, his work was exhibited at Pennsylvania's prestigious Reading Museum. For an SF artist to have his imagineering displayed in the same halls as those housing the fine art paintings of Howard Pyle and N.C. Wyeth is quite an accomplishment. For, in a time when space art is blatantly being acknowledged as a formidable branch of art, science-fiction illustration is only beginning to enter the mainstream of American culture.

According to DiFate, he owes his success to those classic SF film matinees of the 50s. Some of his first visual memories center around key scenes from *Forbidden Planet*, *Invaders from Mars* (he is still in awe of director/designer William Cameron Menzies) and the George Pal classic *The War of the Worlds*.

"I had this obsession with *The War of the Worlds* when it first came out," DiFate confesses with a smile. "I used to have these daytime fantasies about the film. I even modeled the Martian ships out of clay. As a kid, I would always race home after going to the movies and try to draw what I had seen. It turned out that I have fairly excellent visual recall. In fact, representational art was really the only thing I could do well as a kid. I had pretty average grades and was terrible in math. This was my downfall. I would have been an astronomer, otherwise."

During his moviemania childhood days,

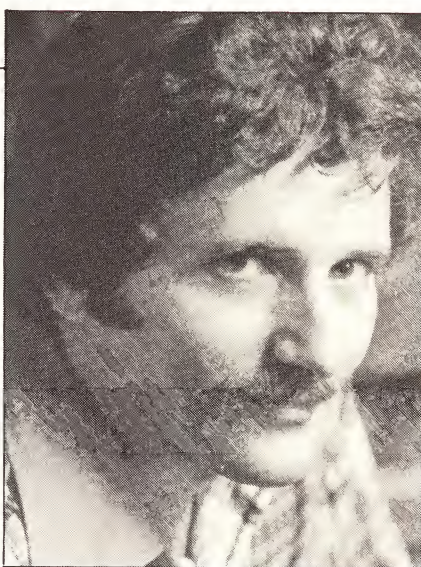


PHOTO BRIAN FRASER

Vincent DiFate's father was an aeronautical engineer, which may account for the sense of logic to DiFate's ships.

DiFate stumbled onto science fiction literature. The first book he remembers reading cover-to-cover was Robert Heinlein's *The Puppet Masters*, solely because of the remarkable cover art by Stanley Meltzoff. "In my opinion," says DiFate, "it is one of the finest SF illustrations ever done, even though it had nothing to do with the book."

Bitten by the SF bug, DiFate continued his reading, becoming a real hardware buff. Nevertheless, he confesses that his interests had their fantasy moments. "I have to admit I am a very big fan of Bradbury. I went through the same thing that most kids did, reading Bradbury as a kid, loving it, being able to smell the leaves and experience the midwestern country life that none of us really had but we all thought about. And then, being introduced to the John W. Campbell variety of science fiction, the stuff that goes 'clang,' and seeing all the gaping holes in the Bradbury stories in terms of scientific credibility and becoming very disdainful. Then, of course, redis-

covering Bradbury years later. You see that he is a poet and scientific credibility didn't matter at all."

Inspired now by both celluloid imagery and SF art and literature, DiFate began a serious study of art, sketching and painting more frequently on his own. He was given an extra boost by his scientifically oriented home life. To this day, many of the artist's best spaceship renderings are culled, in part, from memories of his aeronautical engineer father's blueprints and designs.

By 1971, DiFate was ready to enter the SF world as a professional cover artist, his first assignment being *Broke Down Engine*. After that, the assignments just kept coming, along with the editorial challenges. DiFate found that editors can be both very strict and very lax about their desired cover concepts.

Designing a cover for Colin Kapp's *The Chaos Weapon*, for instance, turned out to be a real brain-teaser. The chaos weapon is a machine the size of a solar system. It's illuminated by four suns and powered by four black holes. The machine distorts entropy in the universe, thus causing disasters to occur.

"When I tried to draw it as the author had visualized it," states DiFate, "it looked like a huge flashlight. The editor very much wanted to have the thing visualized and wanted it in scale. However, she also wanted the characters to be working with it... somehow."

DiFate's ultimate solution surfaced in a painting showing a view from inside a spaceship with the three main characters in the foreground. A section of the titanic chaos weapon can be seen through a portal in the background. "I took viewscreen im-

This 1977 *Analog* cover painting of an anti-g vehicle illustrates George R.R. Martin's *After the Festival*, his first novel.





Above: one of DiFate's earlier illustrations was for a sword-and-sorcery novel, *Jandar of Callisto*. He was admonished by the editor to avoid a sword-and-sorcery look, which was on the way out. DiFate managed an "organic" SF look that still retained the character of the novel. Right: the mobile space station from Dick Lupoff's *Triune Man*, published in hardcover and paperback by Berkley/Putnam. The space station housed an enormous library built as a cooperative venture of several alien races. The station travels through the universe, lending its stored knowledge to all seekers.



ages of the machine as seen from different angles and put them in the foreground. In the background you can see the front part of the chaos machine through the portal and a tiny spheroid space station with lots of ant-size spaceships around to give some feeling of the size.

"The three main characters are in the foreground. The middle guy is the hero. He's got an invisible god on his shoulder. (Oh yes, the editor insisted I paint the 'invisible' god that the author describes.) It is an extra-dimensional creature. If the light angles are just right, you can just make out the outlines. Unfortunately, the painting was about 20 inches high and the book

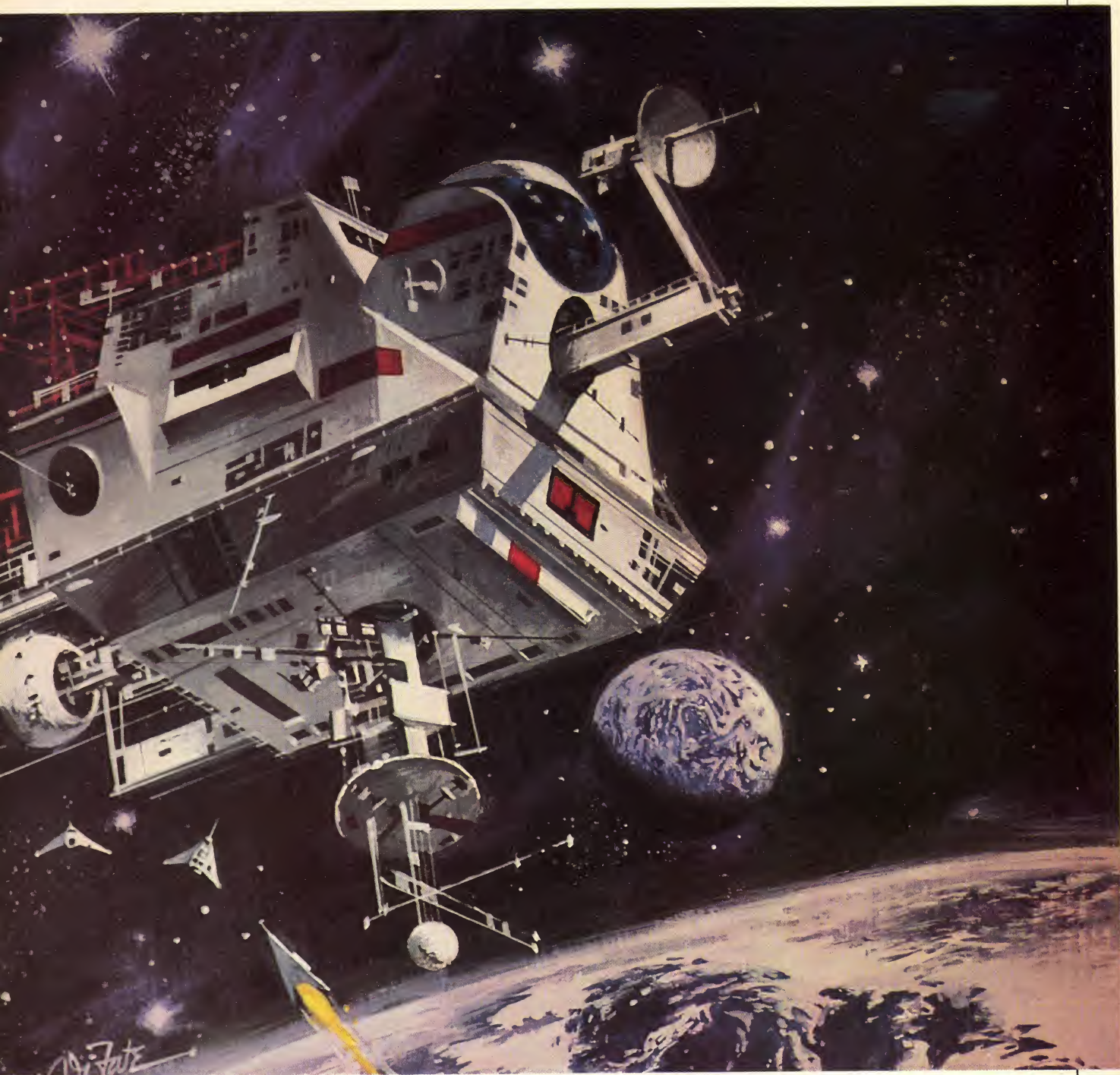
cover only seven inches. So, on the jacket, the little creature completely disappeared. If you put a slide of the painting in a projector you can just see the little guy on his shoulder, but it's not on the book cover. But the fact that the editor knows and I know it's there makes us both happy in the knowledge that we've been faithful to the author."

As fate would have it, the artist's newest project will take him back to his science-fiction roots. He has just been commissioned to do the covers for Ballantine's upcoming reissues of the classic novels of Robert Heinlein. Considering the number of times the books have been published with a varie-

ty of covers and bearing in mind that one of those covers is DiFate's very favorite SF illustration, the artist finds himself forced to come up with very unique cover concepts.

His ideas will come from Heinlein himself. "I will probably attempt to illustrate each story in some way. The first book will be *The Revolt In 2100*. I am looking forward to rereading each novel and finding that one image which will be right for the book."

Now a veteran of some seven years of spacey painting, DiFate finds that he has fans of his own. And, even as DiFate attempted to build models of the images that impressed him in the 1950s, his legions of



followers are attempting the same task using his paintings as a basis for design. . . an admittedly difficult task according to the artist.

"Though a lot of *Analog* readers have written to say that they've built some of the things I painted for that magazine's covers," he says, "and even *FUTURE LIFE*'s publisher, Kerry O'Quinn wished he had a model of the ship I painted in the background of the art I did for the Space Art Club, I suspect a lot of my paintings would not work in three dimensions. I think most of the things I do are probably convincing within the context of the painting. If you tried to look at the other side, you would

have problems. I paint three dimensionally, but whether they would work in reality varies from piece to piece.

"*The Chaos Weapon* painting that I described is a notable exception. I knew I had to devise some way of showing that machine in its entirety. The machine is shown in three separate views so you can tell that I have taken the time to tell how the whole thing is actually going to look in three dimensions. But I don't often do that. What is important to me is that it functions within the confines of the painting. What is important is atmosphere and making it look like it exists or making people believe it exists.

"I've never really learned the art of fudging—putting strategic blobs of paint in certain areas that seem to create a whole structure. John Berkey is, of course, the master at that sort of thing. He can give you all sorts of details that look very convincing, but on close inspection prove to be just blobs of paint. I've never had that gift."

Although DiFate has his favorite illustrations (including *Broke Down Engine*, the Great Writers series' *War of the Worlds*, *The Chaos Machine*, a pre-production painting done for NBC's *The Hunchback of Notre Dame* and the cover for the *Analog Annual* which appears in *STARLOG*'s *Space Art* book), he is modest about his



Left: *Paradox Lost*, (1974) published by Berkley, a collection of short stories by Fredric Brown, who had just recently passed away. The painting depicts a time portal, which a young kid discovers while day-dreaming in class—he sees a fly appear and disappear in front of him. Right: *The Chaos Weapon* presented special problems for DiFate (see story on page 58.)

work. “As an illustrator (distinct from a fine artist), working in a limited way for certain limited objectives, I don’t expect my work to become durable museum paintings. I don’t even know if I want to continue being an illustrator for the rest of my life.”

DiFate would like, at some point, to return to his first love... motion pictures. “I’ve always wanted to get involved in film,” he sighs, “and I think I may enter the business initially as a designer.”

In fact, before becoming an illustrator, DiFate attempted breaking into film, working for Ralph Bakshi at Krantz Animation. “Bakshi was working on the *Spiderman* cartoon show,” remembers DiFate. “I got a job in the background department painting bushes, wire fences and trees. Finally, I was shifted over to the in-betweening department as an assistant animator. Then, one Sunday morning, I read this scathing newspaper editorial about violence on kiddie programs. *Spiderman* was at the head of the list.

“On Monday morning the show was canceled. I was the only non-union member as I had not yet worked the necessary six months for a card... I was only two weeks short. So, I was the first to go. The next thing I heard, Ralph was doing *Fritz the Cat*. In terms of my brief career, most of my in-betweening was for a *Spiderman* episode entitled ‘Menace From The Bottom of the World.’”

Today, when not illustrating or dreaming of a career in Hollywood, DiFate spends his time both lecturing and writing about the field of illustration, promoting recognition for SF illustrators. In whatever spare time he has left, he has found occasion to write fiction and create several planetarium shows for the Andrus Space Transit Planetarium. Obviously, the field of SF illustration is too small a shoe for multi-talented DiFate. “I guess good science fiction is really anything we like,” he says, mulling the future. “I think I’d like to be George Lucas.”



Right: many people familiar with DiFate's realistically detailed spaceships, are startled to learn that he can draw figures as well. These studies are part of a series he did of a man's face and demonstrate something of artist DiFate's fine skill.

Planetariums

(continued from page 49)

mance.

With so many interesting facilities in existence, what can one expect in the near future? The next major facility currently in the planning stages is for the campus of Arizona State University in Tempe.

With a projected cost of \$5 million, this major facility is being designed as one of the most dramatic showcases for astronomy in the world. Actually more of an astronomical museum, exhibits will encompass optical, satellite and radio astronomy as well as meteorology and planetology.

Dan Matlaga, planetarium coordinator for this phase of the project, says the facility will incorporate all modern concepts of projection and lighting ideas—plus a few steps beyond. The beyond includes plans for electronic and mechanical technicians from Walt Disney Enterprises to design many of the control systems and effects.

"We want visitors to the planetarium to completely forget about the outside world once they go through the doors," says Matlaga. "Our objective is to give visitors a unique concept of the universe, and if we can help them to forget a lot of Earthly notions, we feel it'll be easier to take them into that 'larger world' mentioned by Obi Wan Kenobi in *Star Wars*."

This doesn't mean, however, that the ASU project is going to be all effects without substance. "Above all, we want to present productions that are educational, meaningful to the common observer and even inspirational," says Matlaga. "We know we can't compete with Hollywood when it comes to special effects—the money just isn't there. But we can present the wonders of the universe in ways that Hollywood can't approach."

The planetarium theater itself will be the largest facility built in many years, around 70 feet in diameter. Current plans call for the installation of either the last of the Zeiss model VI or the first of the VII on a turntable and elevator.

Though many of the technical specifics are not available at this time, one unique aspect of this planetarium has been mentioned. Plans call for productions to make use of original music (ASU has an up-and-coming symphony orchestra) over a \$200,000 sound system.

The theater, as large as it will be, will encompass only one sixth the total area of the building. Almost as large as the planetarium itself will be an overhead orrery of the entire solar system, equipped with 360-degree rear-screen wall projection (a similar, but updated and larger version, of the New York Hayden Planetarium's Copernican Room).

A TV-projection system is planned for the exhibit halls which will be automatically tied in to weather satellites for real-time viewing of Earth and clouds. A heliostat will project live images of the Sun in

another area. A 24-inch telescope will be available to the public, with image amplifiers, for the study of the Moon and planets.


For the Future

Further research into control systems and optical effects, especially with lasers, offers us a very exciting view of the ultimate theater of tomorrow.

Charles Yelton Jr., new product development manager for T&T Technology in McFarland, Wisconsin, has bought the Boeing Company's rights to a laser-projection system for planetariums. Though its applications for other areas are too numerous to mention, the laser projection system would totally revolutionize the way planetarium shows are presented. Basically, the system utilizes a laser bouncing off a rapidly rotating, computer-controlled mirror.

"Stellar images would be true pinpoints of light," Yelton says. "What's more, we would no longer be limited to viewing the universe from the immediate area of the Sun. By plugging the proper coordinates into the computer, we could actually see the shifts in stellar patterns that would be visible if we could travel to, say, Sirius or Betelgeuse. We could also witness the proper motion of the stars over eons of time. The planetarium would become a true research tool."

Special effects would also change dramatically. The laser-computerized planetarium is envisioned by some to be something akin to turning the dome into a gargantuan television set with the laser beam scanning the entire dome surface many times per second. Looking at the facility in this way, one could create special effects on the dome simply by presenting a drawing or photograph to a TV camera and letting the computer digitize the image for later projection and modification. All of the hundreds of complex electro-mechanical contrivances now being created for planetariums, and all of the room and circuits they require, could conceivably be reduced to 1s and 0s on tape, available for instant replay under any circumstances. And, according to some, there is even the possibility of holographic imagery! The new technology of lasers and microprocessors is waiting in the wings.

Interestingly, this new technology will give planetariums the capability to lead in the development of new production techniques, rather than follow in the shadow of Hollywood. Except for improvements in technology, Hollywood hasn't developed any new cinematic concepts since the late 50s. The bigger-than-life dome projections of the future will give planetarium operators a new freedom of creative expression unknown today... a freedom as open and as boundless as the universe itself. 

"Star Trek"

(continued from page 30)


volved." Roddenberry recalls. "Everyone asks me, 'Aren't you excited?' Well, to be honest, it took me a week or two to realize that all this was really happening. The old relationships between the actors and the actors and myself have all been rebuilt. We go over script points together since, at this point, they are experts both on *Star Trek* and on their characters in particular. We've spent hours together, hammering out concepts."

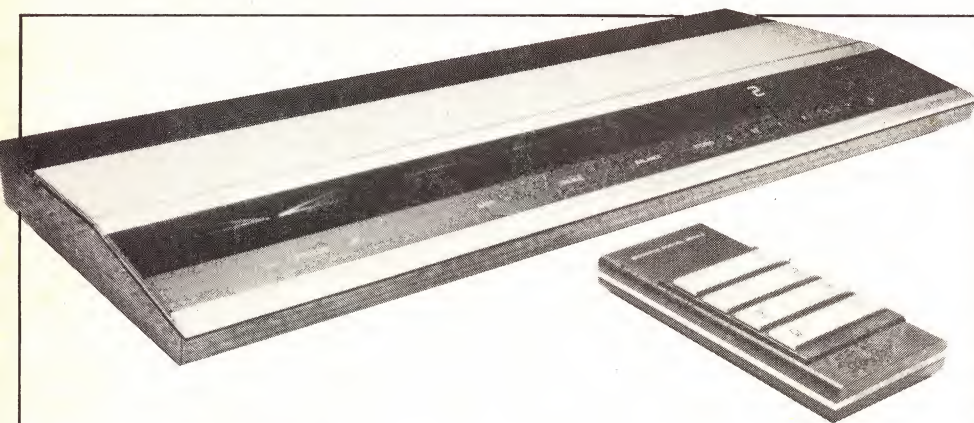
Frequent parties held on the set have helped make the ambiance on the remodeled spacecraft like a family affair—celebrations honoring, among other things, the birthdays of Roddenberry, Wise, Collins and Khambatta. In Roddenberry's eyes, the movie, thus far, has been a delightfully communal experience, with all parties participating creatively.

Despite the festive atmosphere on the set, however, there have been some alleged "problems," usually of a humorous nature. Young firebrand Decker, for instance, is a film character originally slated as Kirk's successor in the ill-fated *Star Trek* syndicated TV series. In the motion picture, however, he finds himself replaced at the *Enterprise* helm by a returning Captain Kirk. For the rest of the plot, Decker is less than pleased with the situation, a fictitious emotional attitude that has caused rumors to fly about a real-life rivalry between actors Collins (Decker) and Shatner (Kirk). Roddenberry only smiles at such tales. "Silly stuff."

On a slightly less silly note, was the crisis faced by actress Khambatta who, in order to portray the role of alien crew-member Ilia, had to have her head shaved. The actress readily agreed to the stipulation. As she stepped into the barber's chair a week before shooting commenced, she found herself faced with a gaggle of still photographers and film documentary crews, present to record the historic event.

Under the glaring lights of an army of cameras, the barber began. The shearing went along fine until the actress caught a glimpse of her head in the middle of the hairy event. The Indian beauty reacted quite normally. She cried... with cameras rolling and photographers snapping away.

"She got through it like a trooper," Roddenberry now reflects, "quivering lips and all." Today, of course, Khambatta, like the rest of the *Enterprise* crew, is working diligently on the Paramount lot, taking part in, truly, a historic motion-picture event. Relaxing in his office not a block away from the main sets, Roddenberry smiles at the progress made thus far. "I know there are a few people who are worried about the changes involved in taking our show from TV to the big screen," he says, grinning. "And all I offer is the reactions we've gotten from the people who have watched our dailies.... 'Thank God... it's still *Star Trek*!'" 



Beomaster 2400

By Bang & Olufsen. Stereo receiver with remote control. Suggested price: \$595.

Accessibility to music is the design motto for this sleek brushed aluminum and rosewood receiver from Bang & Olufsen. Using the cordless remote control while comfortably ensconced in your listening

position, you can select any of four user pre-set FM stations, switch to phono input, raise or lower the volume and turn the receiver on and off. Large illuminated indicators let you see the status of the unit even from across the room. The visible front panel controls which operate volume, pre-set FM stations, and input selection can be operated without the remote control by simply touching the smooth front panel.

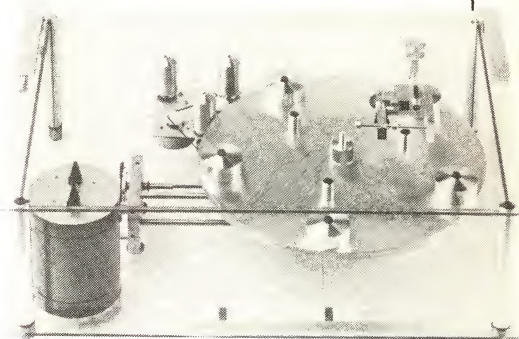
The controls function electronically, responding to the presence of your finger. Hidden away under the brushed aluminum lid are the controls which require only occasional use—bass, treble, balance, random FM tuning and others. The tone and balance controls use smooth sliding controls of the type found on modern mixing consoles; illuminated indicators on the front panel show to what extent they have been moved from the center position. There is also a volume memory, which, once set, remembers how loud you like your music, so that whenever you turn the unit on, it is at that level. Technically the amplifier and tuner sections are superb. The amplifier is very conservatively rated at 30 watts per channel (RMS), both channels driven from 20 to 20,000 Hz at a maximum of 0.2 percent total harmonic distortion into 4-ohms. The tuner section makes use of FET circuitry for high sensitivity and selectivity. Complete information is available from Bang & Olufsen, Inc., 515 Busse Road, Elk Grove Village, Illinois 60007.

The Microtracer

By Transcriptors Limited. Transcription turntable and tone arm. Suggested retail price: \$690.

The Microtracer turntable has truly a unique solution to the problems of tracking error, inertia and stylus skating. Some companies have elected to use straight-line-tracking tone arms that move laterally across the disk. Transcriptors doesn't believe in loading down the tone arm with the extra mass this sort of system requires, so they keep the tone arm in a fixed position and move the platter horizontally

beneath it! With this unique design conception, the Microtracer can track as low as 0.2 gram with its 13.4 gram tone arm. Its maximum tracking error is 0.1°. According to the manufacturer, "The tone arm's jewel unipivot is fluid damped and too short and stiff to have resonance. Its low inertia and high seesaw frequency allow it to trace the sharpest warps without stylus deflection." Flutter is immeasurable and wow is less than 0.05%. The turntable is belt-driven with speeds of 33 1/3 and 45 rpm. The Microtracer is manufactured by Transcriptors Limited of Ireland and imported by R. Allen Waech, P.O. Box 10357, Milwaukee, WI 53210.




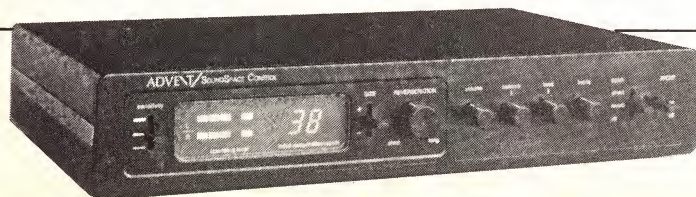
SoundSpace Control

By Advent. Acoustical Environment Synthesizer. Suggested retail price: \$595.

The idea of bringing home concert-hall-and-other acoustics isn't new, and many products—from reflective speaker systems to analog and digital time-delay products—have attempted to imitate the way sound is shaped in live listening experiences. But Advent's SoundSpace control is the first product to allow the listener to accom-

plish easily and repeatably, what really needs to be done. Uniquely, the SoundSpace control is easy to operate. First you choose the audible size of the space you want to create, from a small club to a vast cathedral. You make the choice with the help of a digital "Size Index" readout. After choosing how big a space you want, you can then adjust the reverberation control to select any of a whole range of acoustic environments—from very "dry" to very "live" in reverberation. You can, in effect, fill the hall with sound absorbing surfaces and people, or empty it for sound

that resounds dramatically. The SoundSpace control is a 32,000-bit computer that uses the equivalent of more than 43,000 transistors. (In the days of vacuum tubes their hardware would have filled an auditorium and required enough power to light up a city block!) The output of the SoundSpace is fed to a second amplifier (which needs no controls) that drives a second set of two or more speakers placed at the sides and/or rear of a home listening room. For complete information and technical specifications, write AdventCorp, 195 Albany St., Cambridge, MA 02139. 



Inventors and manufacturers are invited to submit items. Forward information to David Hutchison, Science Editor, FUTURE LIFE, 475 Park Ave. So., NY, NY 10016.

FUTURE LIFE

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Help us get to know you better. Please take a few moments to fill out this survey (all information is strictly confidential, and you need not include your name).

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☐ 26-34 ☐ 35-49 ☐ 50 & over
2. Are you a ☐ male ☐ female?
3. Does your household use credit cards?
☐ yes ☐ no If so, indicate which one(s):
☐ Auto Rental Card ☐ Gasoline Credit Card
☐ Diners Club ☐ American Express
☐ BankAmericard/VISA
☐ Master Charge ☐ others
4. Do you own photographic equipment?
☐ yes ☐ no
☐ own 1 camera ☐ own 2 cameras
☐ own 3 cameras or more
5. What type of camera do you own?
☐ Instant ☐ 35mm
☐ 8mm or Super 8 ☐ other
6. What brand of camera(s) do you own? _____
7. What type of photographic accessories do you own?
☐ slide projector ☐ movie projector
☐ dark room equipment ☐ other
☐ one or more of above
8. What brand stereo system do you own? _____
9. What would you estimate as the amount of money spent for your entire system? _____
10. Does your household have an audio/stereo system?
☐ yes ☐ no
11. If so, what type of system?
☐ console ☐ separate components:
☐ hi-fi receiver ☐ speakers ☐ turntable
☐ cassette deck ☐ reel-to-reel deck
☐ video recorder ☐ stereo kit
12. Do you buy records or pre-recorded tapes, cassettes, video cartridges? ☐ yes ☐ no
13. What type of music do you prefer?
☐ hard rock ☐ soft rock ☐ country/western
☐ folk ☐ classical ☐ soundtrack scores
☐ disco ☐ jazz ☐ soul ☐ other
14. Do you belong to a record or tape club?
☐ yes ☐ no
15. Do you belong to a book club? ☐ yes ☐ no
16. Do you, or does anyone else in your household currently own any cars? ☐ yes ☐ no
17. If so how many cars does your whole household own?
☐ one ☐ two ☐ three or more
18. Do you smoke cigarettes? ☐ yes ☐ no
19. If so, which brand(s) do you smoke? _____
20. Have you consumed or served any alcoholic beverages within the past year? ☐ yes ☐ no
21. Which brand(s) do you drink or serve? _____
22. Do you drink colas and other carbonated drinks?
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Can Space Technology Save the Seas?

In recent years, space flights have given us the perspective we had been lacking so long: a general picture of our planet actually contemplated from outer space. It was not by mere chance that space exploration coincided with the birth of our environmental awareness. Thanks to space research, the new generation realizes that there is one single Earth, and that most of this is covered by one single ocean.

To conserve, to protect, to reuse a clean global water system implies a permanent control of the vitality of the oceans. Unfortunately, decisionmakers, quick to grab an electoral issue, are exceptionally slow in dealing with matters that extend in time beyond their mandate or their retirement. It is a shocking fact that there is yet no substantial national or international project to monitor the oceans. And the oceans are crying for help.

The only real color that creeps into the blue of the sea is the dark brown filth from polluted rivers, from city sewers, from industrial sludge, from landfill, from careless development, from countless marinas, from millions of tourists who feel so happy when they speed their boats and empty their bilges into the sea, throwing anything overboard and having a glorious swim in the contaminated water. However, the day will come when the urgency of controlling the sea internationally will be recognized; and technology is ready to meet the challenge.

Compared with the scale on which we humans are made, the sea is a giant environment, constantly changing and incredibly complex. The vast, whirling sea cannot be truly understood from spot measurements made sporadically with microtools such as thermometers, water samplers, sediment samplers, or current meters lowered from the deck of a ship.

Today, remote sensing and telemeasurements from satellites and aircraft are the only methods of investigation compatible with the scope of the ocean, and with the severity of its man-made problems. This is the only way for us to sense the pulse of the oceans. We know that the pulse of the oceans is the only symptom from which we can diagnose

the degree of health of the pyramid of life that we are privileged to hold at our mercy.

Space colonies will be able to perform, probably, industrial things that we cannot do on Earth, and I am for it. It will be a fantastic platform for research, for chemistry, for biological experiments. However, I do

every 10,000 calories from the Sun and convert it into energy for us. That's all we need.

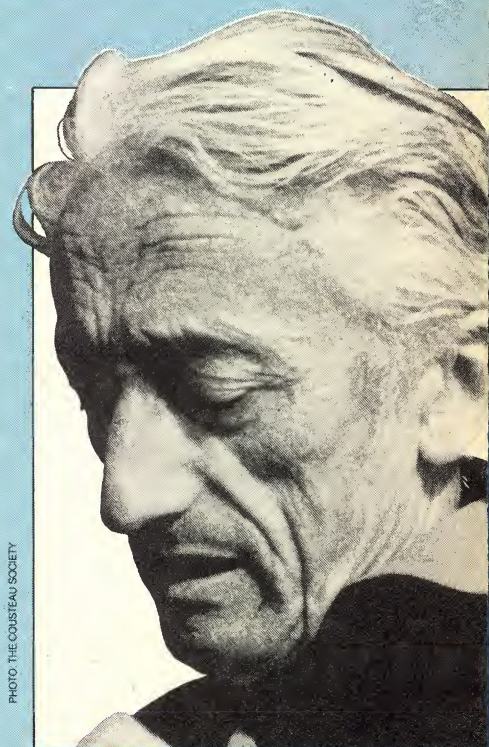
Energy from the Sun—clean, inexhaustible—has only one drawback. It is thinly spread over large surfaces. On land, people must build such clumsy concentrators as batteries of mirrors; or we have to

Cousteau

Since 1936, Jacques-Yves Cousteau has dedicated his life to exploring the sea. It was during that year that he began experimenting with various prototypes of underwater breathing apparatus. In 1943, with Emile Gagnan, he invented the Aqualung. During World War II he helped form the French Navy's "Experimental Diving Unit."

Following the war, Captain Cousteau began a life of oceanographic research aboard his re-converted mine sweeper Calypso. In 1951, with Andre Laban, he perfected the first practical underwater TV camera. In 1952, he organized CEMA, an engineering organization for the design and development of underwater instrumentation. In 1959, along with Jean Mollard and Andre Laban, Cousteau developed the "Diving Saucer," a unique jet-propelled mini-sub designed for oceanographic research.

For the last 20 years, Cousteau has espoused a philosophy designed to protect the world's oceans from pollution and destruction. He has filmed more than 20 documentaries, written more than 30 books and was awarded the Chevalier de la Legion d'Honneur by the French government.



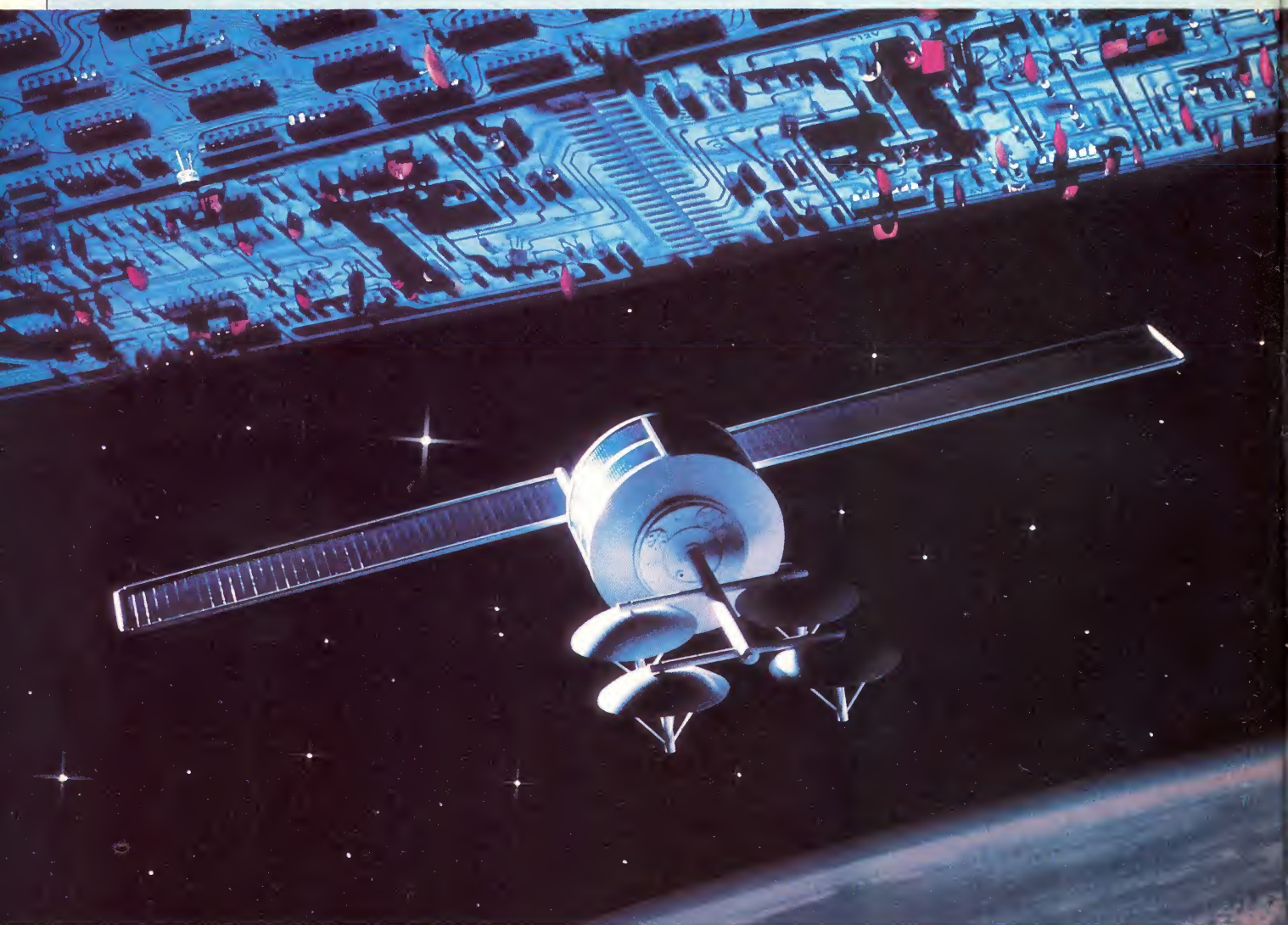
not believe that it's a good thing to try to desert our Earth, to try to live in a space colony. I think that's nonsense. I also think that eventually it will be dangerous to try to collect solar energy from outer space and send it back to Earth for heat.

There is so much natural solar energy on Earth. When you add up all the energy contained in the existing known supplies of fossil fuels—oil, coal, gas—it is equivalent to a little less than the energy of 3.6 days of sunlight on the Earth. If we are not able to get a little piece of that, I really don't believe in technology anymore. However, technology is there. It should be able to take one out of

spread converters over hundreds of thousands of square miles. But the ocean is a formidable natural concentrator of solar energy. Space monitoring will be essential for the clean, harmless management of a fraction of this energy that falls on the sea and that is equivalent to the output of 54 million nuclear plants. However, there is still one thing more important than food and energy; and that is *life*.

We, as human beings, are part of a complex arena of living creatures which started to spread on Earth perhaps three billion years ago and which has never stopped diversifying. The only life system we know

"Of all priorities, the supreme imperative
the water system of our planet . . .



of—and we are part of it—is based on carbon chemistry and cannot develop without water. Even if life exists elsewhere, it is exceedingly sporadic; and very seldom do we find on a celestial body the exceptional and lasting conditions that we have enjoyed on Earth for about three billion years, and are likely to enjoy for another four or five billion years.

The logical conclusion is that, of all priorities, the supreme imperative is to conserve, to protect, to nurse the water system of our planet; because its life is our own life, because its fate is our fate.

In 1967, a United Nations resolution urged the equitable sharing of marine resources among all nations. As a result of this resolution, the U.N. has sponsored the Law of the

Sea Conference. At the Law of the Sea Conference, men of the sea have no voice. Instead of sharing resources, representatives at the Conference have endeavored to cut up the sea into pieces as butchers do with cattle. A trivial incident between representatives of a rich nation and a short-sighted committee could bring about fatal consequences for the world. Having silenc-

s to conserve, to protect, to nurse
because its life is our own life."




ed the experts, lawyers and diplomats labor to plant border-crossings signs in the shifting waters.

A good use of the space shuttle might be to offer a one-week trip around the world to the leaders and the top politicians of our time, so that they could realize that there is only one world and only one blue ocean. If, upon their return, they opened their ears to

the clamor of their people, they would have to switch to new criteria for priority choices. They would have to get their noses out of the Keynesian mousetraps; they would have to look around them and realize what is happening in this world of rapid and drastic changes.

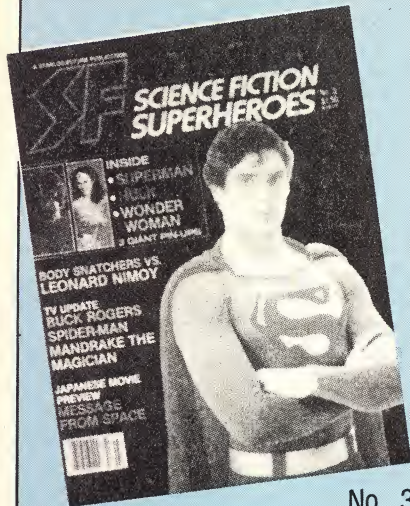
Today the public wants to have a say in public affairs. Constituents want to be

Models and photography by Michael Sullivan

heard through other channels than their official representatives. They no longer accept that a handful of bureaucrats may decide what is good for them. It is high time we all realize that the living water of the oceans is the blood of our planet. It is the same blood for every nation. It is *our* blood. 

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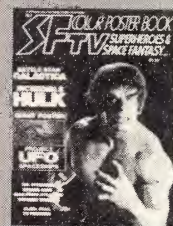


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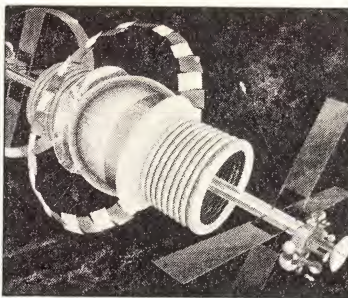
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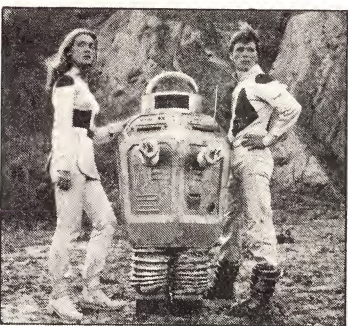
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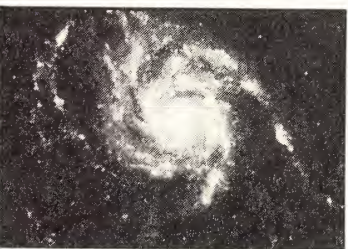
HOW TO BUILD A SPACE COLONY

Princeton physicist Gerard K. O'Neill offers a step-by-step scenario on the construction of the world's first space habitat... *Island One*. Science-fiction speculations become science factual concepts as O'Neill describes a self-sufficient paradise in space, hovering thousands of miles above Earth, free from pollution and heavy industry. The High Frontier.



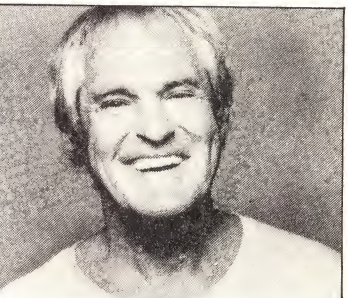
THE SHAPE OF THINGS TO COME

Four decades ago, science-fiction author H.G. Wells wrote his only SF film, *Things to Come*; a philosophical tale of wanton warfare in the city of Everytown. Now, in the wake of *Star Wars*, Wells' ideas have been revamped for the forthcoming widescreen wonder—*The Shape of Things to Come*. FUTURE LIFE gives an exclusive preview of the movie—replete with spaceships, death rays and robots.



NOVA

Artificial intelligence. Future sources of energy. The further explorations of space. All these topics are part of the world of *Nova*. Currently in its sixth year on television, the PBS series is the lone scientific oasis on the tube today. FUTURE LIFE takes you behind-the-scenes at WGBH, *Nova*'s Boston base of operations, for a first-hand look at the filming of tomorrow's visions today.



TIMOTHY LEARY, PhD

Acid casualty or classic example of a great thinker living ahead of his time? Decide for yourself when you read our interview with Dr. Timothy Leary, Genetic Intelligence Agent. Now appearing on college campuses nationwide, his message for the 1960s ("Turn on, tune in, drop out") is replaced with instructions for the 80s: Space Migration, Intelligence Increase, Life Extension—SMI*LE. Science fiction is good for you, says Dr. Leary, and DNA makes no mistakes.

PLUS:

Roger Zelazny imagines crimes of the future... Jesco von Puttkamer envisions life in the 23rd Century for *Star Trek—The Motion Picture*. . . G. Harry Stine looks at FUTURE LIFE's Getaway Special Contest: How do you design an experimental package for the space shuttle? . . . Carolyn Henson continues her revelations on the new space program... *Space Warfare*: Today's military minds have big plans for futuristic space stations. Will the Earth succeed in bringing its squabbles to the stars? . . . movie previews, book reviews, Databank news, the latest in Hardware and Future Forum.

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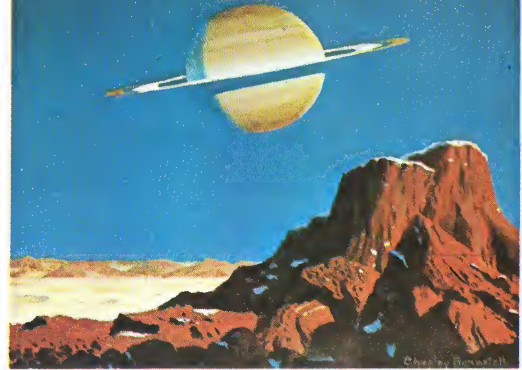
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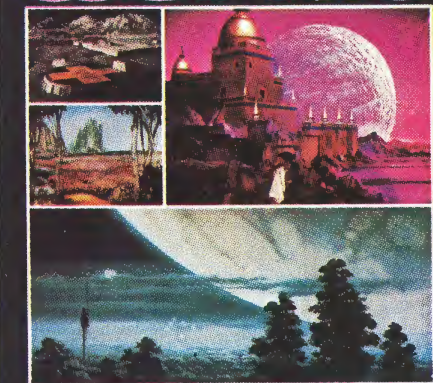
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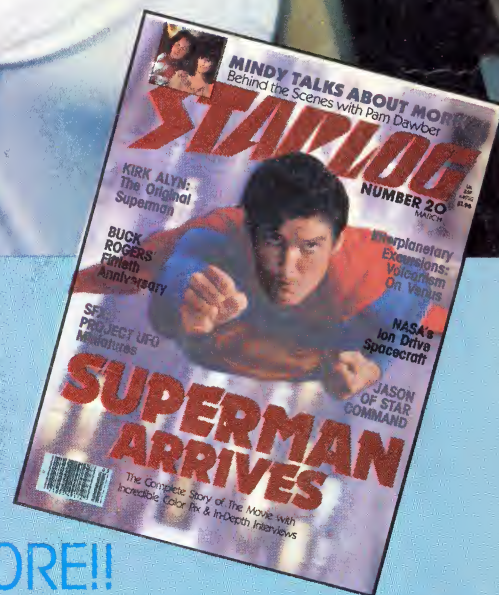


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